

T-34 MENTOR

in action



Aircraft Number 107
squadron/signal publications

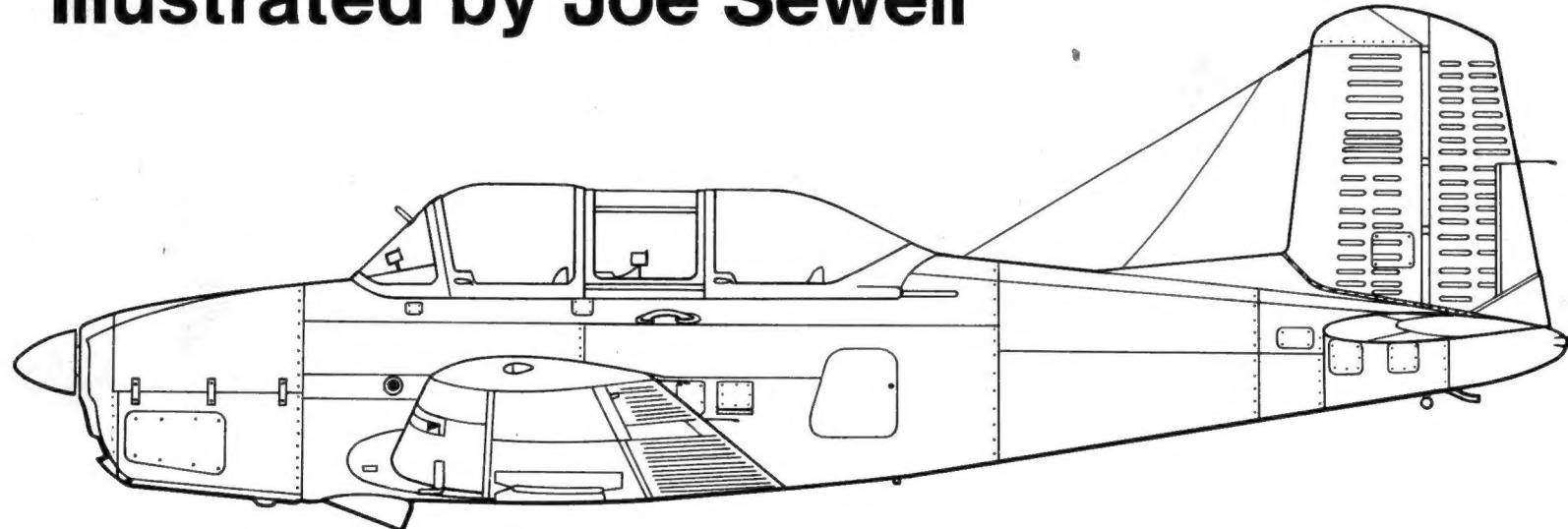
T-34 MENTOR

in action

By Lou Drendel

Color By Lou Drendel

Illustrated by Joe Sewell



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The author and wingman Bob Morse are the two solo pilots for Lima Lima Flight, a civil formation flight demonstration team. Lima Lima Flight consists of six T-34s and was organized during 1988.

FORWARD

The "T-34 Mentor in Action" is my thirty-eighth book for Squadron/Signal Publications. Although the T-34 cannot compare to some of the warplanes that I have flown and wrote about, it holds a special place for me.

My experience with the T-34 began during 1975. I started flying during 1964 and by 1969 I had logged some 550 hours in a variety of light aircraft. I had also logged my first orientation flight in an F-4 Phantom, which left me unhappy with general aviation. A six year hiatus followed, during which I wrote several books for Squadron/Signal. Any one who has experienced flying cannot remain grounded for long and, during 1974, I started flying, checking out in the Cessna 150 and Grumman Tiger, but I knew that flying would again become "sky driving" if I didn't find something more exciting.

During late 1974, a T-34 appeared on our field; it was a Civil Air Patrol veteran which had been purchased by an aircraft broker for \$12,500 (he fully intended to quickly resell it). Unfortunately, one of his partners ruined the engine. A new engine boosted the asking price to \$17,500, too steep for the market at that time. Since there was local interest in the T-34, the partners started a club and sold the Mentor to the members.

One of the partners agreed to take me for a test hop on a blustery morning during March of 1975. After preflight, he climbed up on the wing and got in the back seat! I said I thought he might be showing a little too much confidence in my abilities, but he insisted

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that it was an easy airplane to fly and I would have no trouble. The cockpit had definitely seen better days. Years of sitting outside had crazed the canopy center section and the instrument faces also showed their age, although most worked. The original ARC-12 radio was still installed, but it was unreliable and was never used. The CAP installed a Narco Mark 12 radio, but it too had seen better days and was not working.

Sitting in the cockpit, with the stick in my right hand and the throttle in my left — sitting higher than in any general aviation aircraft and with a full 360 degrees of visibility, I felt that this was a special aircraft. When I started the Continental O-470, the sound of the engine could have easily convinced me that I was in a powerful fighter.

The T-34's controls were designed to give fledgling military pilots the feeling of a 1950s vintage jet fighter. I did chandelles, lazy eights, and shot touch and go landings. After an hour, I felt at home and joined the club immediately. That was fifteen years and 1,500 flight hours ago and that feeling has never left.

T-34 Mentors have escalated in price from \$10,000 (1975) to over \$100,000. Today a restored T-34 with a 285 hp engine and bare bones IFR avionics will bring anywhere from \$150,000 to \$200,000, depending upon the quality.

Shortly after joining the club, a T-34 owner advised me to call Charlie Nogle for parts support. Charlie's headquarters was in Tuscola, Illinois. We visited his facility for an inspection of our T-34 and left that meeting discouraged with the condition of our aircraft, but encouraged that we had help to restore it. Friend is the best adjective I can think of to describe what Charlie has become to T-34 owners. He has spent a lifetime building an inventory of T-34 parts and his knowledge of the T-34 is boundless, as is his willingness to share it.

Charlie founded the T-34 Association to provide for the exchange of information. The Association has fostered many lifelong friendships and enriched hundreds with a special camaraderie. There is no doubt that without Charlie's dedication and generosity, there would be far fewer Mentors flying today. A great deal of the information in this book was collected by Charlie and I am indebted to him for its use.



Three T-34 Mentor production variants are parked outside the Beechcraft plant in Wichita.
The T-34C-1 (foreground), T-34A and T-34B are all civil owned and operated. (Beechcraft)

INTRODUCTION

The T-34 Mentor began as a private venture designed by Walter Beech shortly after the end of the Second World War. The Beechcraft Model 35 Bonanza had been flying for about a year when Beech felt that there was a market for a military trainer based on the Bonanza and he decided to proceed with the project (the Mentor was to be his last project).

At the close of the Second World War, the defense budget had no funding for the development of a new primary trainer. Despite severe funding cutbacks, inter-service rivalry remained intense and none of the services wanted an aircraft that had been developed for a rival service. On top of this, the public was war-weary and less than tolerant of any new military spending programs. This was especially true for a new trainer, when there were over 50,000 single engine war-surplus trainers still in the inventory.

Walter Beech was well aware of these problems, but he was also a visionary who was not afraid to take risks. Beech had faith in his company and in sound engineering combined with aggressive marketing. Beech and his marketing staff approached the military with an economy sales approach. The thousands of single engined World War II trainers burned a lot of aviation gasoline and/or were expensive to maintain. Beech stated that he would give the services the opportunity to purchase a new aircraft which would be relatively cheap to operate, easy to maintain, and yet incorporated state-of-the-art features.

Beech used the A-35 Bonanza as a starting point and began work on the trainer design under the company designation, Model 45. Several different models were built, including one with a V-tail, similar to the Bonanza. Although the V-tail worked well, Beech felt that the conservative military would prefer a conventional tail and that is what emerged on the final design. The same basic wing, landing gear, and some fuselage parts from Bonanzas were used to build three proof of concept aircraft, which were built as a private venture and completed during 1948.

The first two were powered by 205 hp Continental E-185-8 engines, while the third prototype had a more powerful 225 hp E-225-8 engine. Company test pilot Vern Carstens made the first flight on 2 December 1948. The company prototypes were then shown to the Air Force, which ordered production of three military service test aircraft under the designation YT-34.

The Model 45 prototypes made their public debut at the 1949 Cleveland Air Races. The Model 45 was a hit and would have received much more publicity had it not been for the tragic death of Bill Odom, whose P-51 crashed during the Thompson Trophy Race. The Mentor was flown at Cleveland by Bevo Howard and Betty Skelton and their demonstrations made the Mentor's debut impressive. Bevo Howard's Hawthorn Aviation later became the Air Force's first contract flight school to use the T-34A.

During mid-1949 the Air Force announced that it would hold a primary trainer evaluation at Wright Field, Dayton, Ohio. Temco submitted a hastily-converted "rough Swift", powered by a 145 HP Continental engine, while Beech entered the prototype Model 45 with the 165 hp Continental E-165 engine. Neither aircraft was ready for the competition and both were considered underpowered by the military. Fairchild entered their T-31 prototype.

The competition lasted less than a month and on 24 March 1949, the Air Force announced that it had selected the Fairchild T-31 and would purchase 100 over the next ten months, at a cost of \$80,000 each. The T-31 (originally built against a Navy requirement as the XNQ-1) was an all-metal tail wheel aircraft, with fabric covered control sur-



This was the first (of three) Beech financed Model 45 prototypes. The prototypes featured a roll-over pylon between the cockpits and was powered by a 205 hp Continental E-185 engine, the same engine installed in the Beech Bonanza. (Beechcraft)

faces. It had been under development for three years and the Fairchild test pilot who demonstrated the T-31 did so dangerously low on fuel, to make the demonstration as spectacular as possible. Although Fairchild had a production contract, the defense budget lacked funding for a new trainer and the T-31 was not produced. During late 1949, both T-31 prototypes were put into flyable storage at Fairchild's factory near Hagerstown, Maryland.

Beech had a study drawn up which demonstrated the economy of operating Mentors in place of the war surplus T-6s, BT-13s, PT-19s, and PT-17s. The study showed that the Mentor would produce a savings of \$150,000 in operating costs over a five year period when compared to the T-6. Despite this, the military did not rush to buy the T-34. By the time the production decision was made, Walter Beech was dead, having succumbed to a heart attack during late 1950 at the age of 53. One of his last public appearances was at Randolph Field, Texas. On 2 August 1950, he turned over the three YT-34s ordered by the Air Force for evaluation. The YT-34s differed from the prototypes in having the roll-over pylon between the cockpits deleted and in their power plants. The YT-34s were powered by 225 hp Continental engines with augmentor exhaust tubes.

Also turned over at that ceremony were a pair of Fairchild T-31s (taken out of storage) and the Temco T-35 Buckaroo. All three were finalists in yet another competition for the next USAF primary trainer.

The T-35 was derived from the Globe Swift and was an all aluminum, retractable landing gear, tail wheel aircraft powered by a 165 hp Franklin engine. Several factors were against the Buckaroo: the Franklin engine did not have a reputation for reliability and was going out of production, and tricycle landing gear was viewed more favorably than tail wheel landing gear. Three T-35s were used in the Air Force competition (one of which is still flying, owned by Charlie Nelson, President of the Swift Association).

Before the competition both Beech and Temco made efforts to make their entries more competitive. Both aircraft had bigger engines, militarized cockpits and military prototype/service test designations. The Randolph Field competition introduced a new category of testing — student pilots undergoing training at the field flew all three aircraft during the evaluation. At the conclusion, the expected USAF announcement of a winner was not forthcoming. To make matters worse, there were reports of severe inter-service disagreement over the results which further diminished prospects of gaining funding for

a new primary trainer. Reportedly, the Navy wanted the T-31 to win, which would force the Air Force to pay a portion of the R&D funds expended on the XNQ-1.

The outbreak of the Korean War halted all efforts to purchase a new trainer. The military fell back on the T-6 Texan, buying back a number of civil T-6s and having North American remanufacture them as T-6Gs. The entire trainer program was put on hold until after the war.

With the conclusion of the Randolph Field competition, Fairchild left the trainer market and concentrated on production of the C-119 Flying Boxcar. One of the T-31s still exists. The radial engine version was operated by the CAP from Washington, D.C. for over ten years before going to a private owner. He flew it for another fifteen years before donating it to the Antique Airplane Association in Blakesburg, Iowa, where it is awaiting restoration.

The Beech and Temco entries were assigned to Muroc Dry Lake (later Edwards AFB) for further testing and evaluation. During the transfer, one of the YT-34s had a spectacular encounter with a power line in the Royal Gorge of Colorado. The delivery pilot was sight-seeing below the rim of the canyon and hit a cable with a wing at 130 knots. The aircraft not only survived the hit, it kept flying and made it safely to its destination. The Air Force ordered a replacement wing and repaired the aircraft. Beech was so impressed with this story that they ran a Bonanza advertisement touting the strength of their aircraft.

Finally, during late 1952, the USAF quietly ordered the YT-34 into production under the designation T-34A Mentor. One of the original Model 45 prototypes was built almost entirely of magnesium and when the test programs were over and the Mentor was ordered into production, Beechcraft stored this airplane outside to observe the effects of weather on the airframe. They were predictably devastating and the prototype was eventually scrapped. The other two prototypes were sold and ultimately exported. Two of the YT-34 service test aircraft were scrapped and sold for salvage. The third was acquired by warbird collector Junior Burchinol of Paris, Texas. He flew it for several years before selling it to a San Diego man, who donated the aircraft to the March AFB museum where it is on static display. This is the only known surviving example of the six prototypes/service test aircraft.

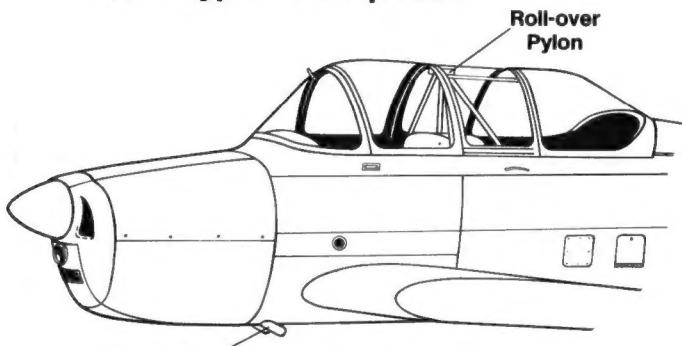
This was one of three YT-34 service test aircraft ordered by USAF for evaluation. The YT-34 prototype was powered by a 225 hp Continental engine with augmentor exhaust tubes. The YT-34 also had the roll-over pylon between the cockpits deleted. (Beechcraft)



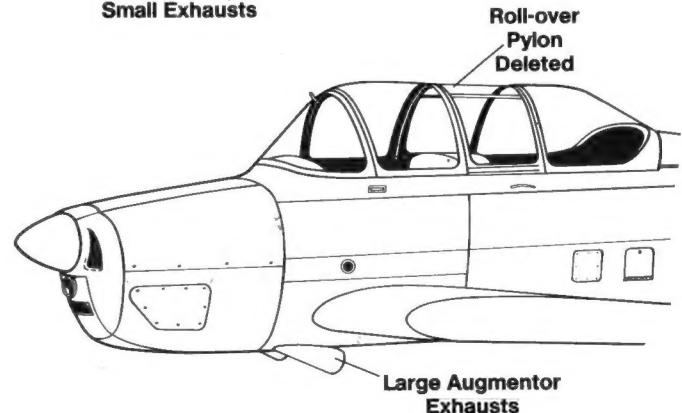
Of the six T-34/YT-34 prototypes/service test aircraft, only one survives today. This aircraft is currently on display at March Air Force Base, California. (Charlie Nogle)

Prototype Development

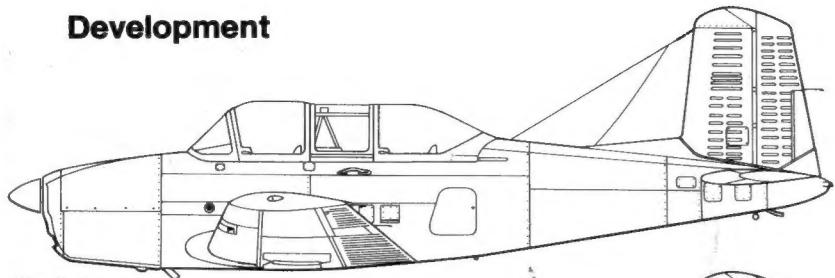
Model 45



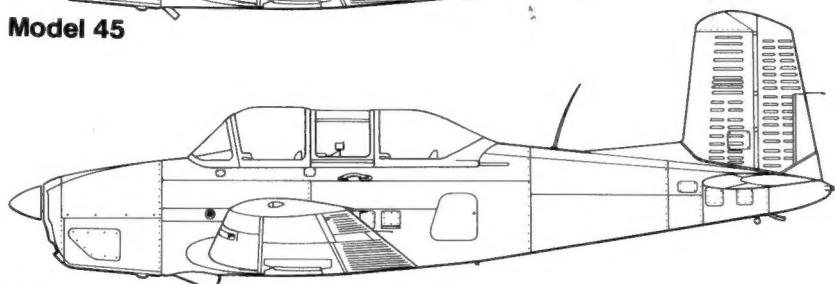
YT-34



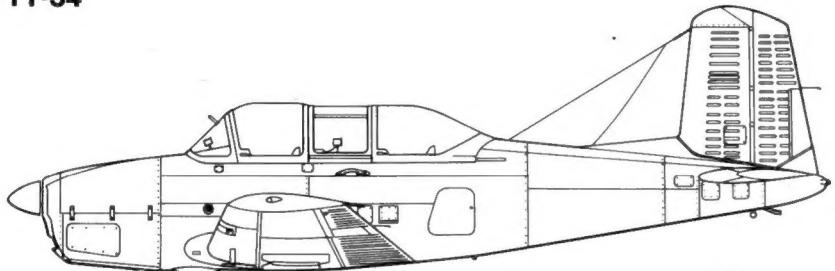
Development



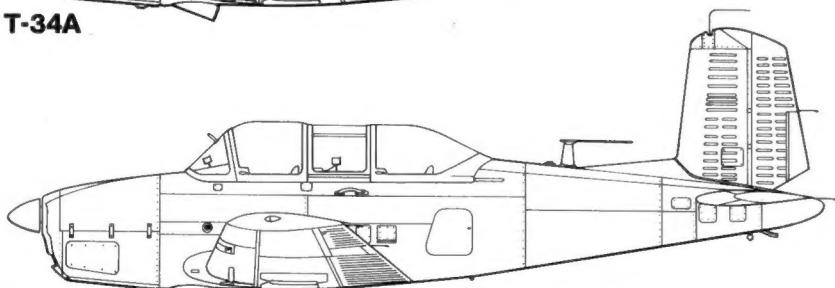
Model 45



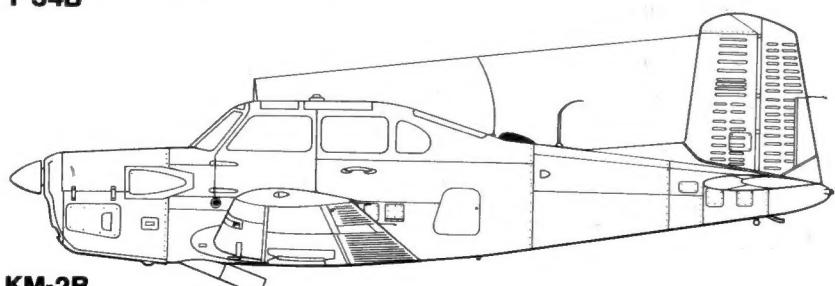
YT-34



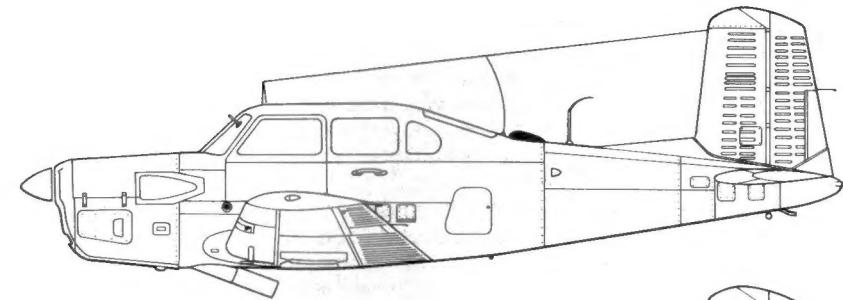
T-34A



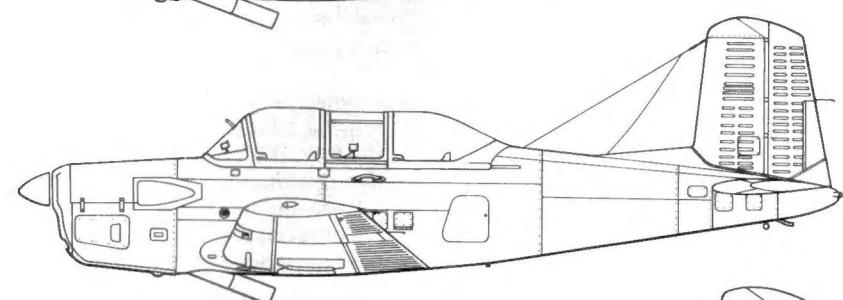
T-34B



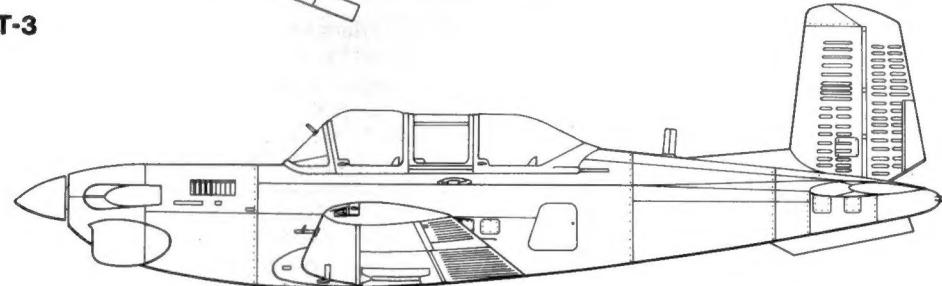
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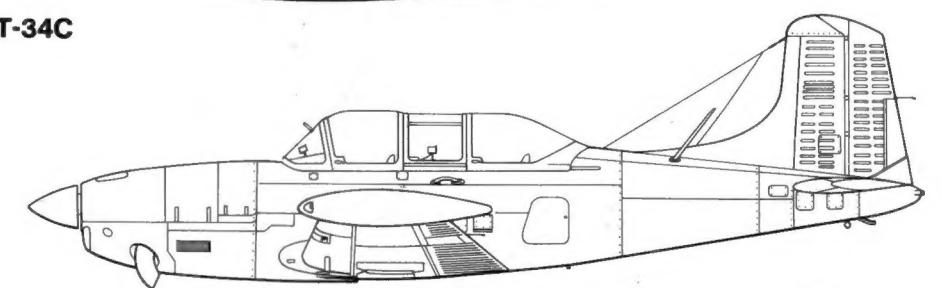
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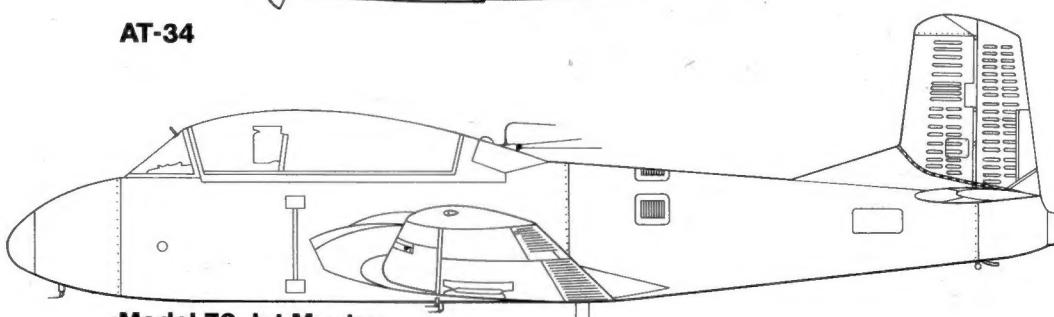
T-3



T-34C



AT-34



Model 73 Jet Mentor

T-34A Mentor

The production T-34A Mentor, known at Beechcraft as the Model A-45, differed externally from the YT-34 in the cowling. The T-34A replaced the four screw type fasteners used on the YT-34s with three latch type fasteners on each side of the upward opening cowling section. Additionally, the cowling was enlarged.

The first production T-34A was delivered to the USAF during late September of 1953. Over the course of the production run, Beechcraft built a total of 353 T-34A Mentors for the USAF. Additionally, a license agreement with the Canadian Car and Foundry company led to 100 aircraft being produced in Canada for the USAF, along with twenty-five for the Canadian armed forces. Canada used the Mentors for two classes of primary students, during which one was destroyed in a fatal crash. The remaining twenty-four were later sold to Turkey where they remain in service today. T-34A production ran from 1953 to 1956.

The service life of the T-34A in the U.S. Air Force was short. The aircraft was used to equip a number of primary training units between 1953 and 1961. During 1961, the Air Force shifted to an all-jet training system using the Cessna T-37 and Northrop T-38 and the T-34s were rapidly phased out.

The production T-34A was powered by a 225 hp Continental O-470-13 engine driving either an eighty-four or eighty-eight inch diameter, hydraulically operated constant speed propeller. The engine was equipped with a pressure injection, single barrel, updraft carburetor (allowing for fifteen seconds of inverted flight). Engine lubrication was done by use of a dry sump pressure lubrication system incorporating engine-driven circulating and scavenging pumps and a separate oil tank.

The ailerons, flaps and tail surfaces were made of lightweight magnesium and corrugated for strength. Adjustable trim tabs were fitted to all control surfaces. The aileron trim tabs were the servo-action type (when the aileron deflected from neutral, the tab moved in the opposite direction) which assisted in control deflection and lightened stick forces. The rudder tab was an anti-servo type (when the rudder was displaced from neutral, the tab moved in the same direction) which increased rudder effectiveness.

The retractable tricycle gear was similar to that of the Bonanza and used air/oil shock struts. There were two main landing gear doors, with the inside main gear doors opening only during gear transition, closing after the gear was up or down. The landing gear and flaps were electrically operated by a 28 volt DC system. There was a landing gear emergency extension handcrank, which required thirty-seven turns to fully extend the landing gear. The steerable nose wheel was linked mechanically with the rudder pedals.

Fuel was contained in twenty-five gallon bladder-type fuel cells installed in each wing and could be drawn from either tank. This was controlled by the pilot with a left, right, or off switch. Fuel booster pumps were provided for both tanks.

The canopy had three sections: a manually-operated sliding section over each cockpit and a rigid center section between the cockpits. Each sliding section opened to the rear and was independently operated. With the canopy open, the T-34A was limited to speeds of 152 knots indicated airspeed. Interior and exterior locking handles were located on the port side of the canopy sliding sections. There was also a canopy overhead closing handle on the inside of each sliding canopy section. Canopy emergency release handles were located on the starboard side of each cockpit and on the starboard side of the fuselage, just under the forward sliding section.

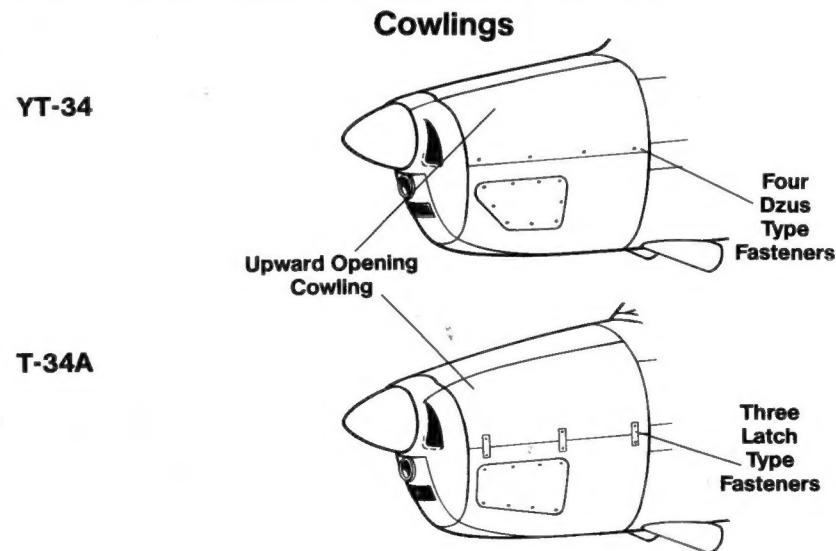


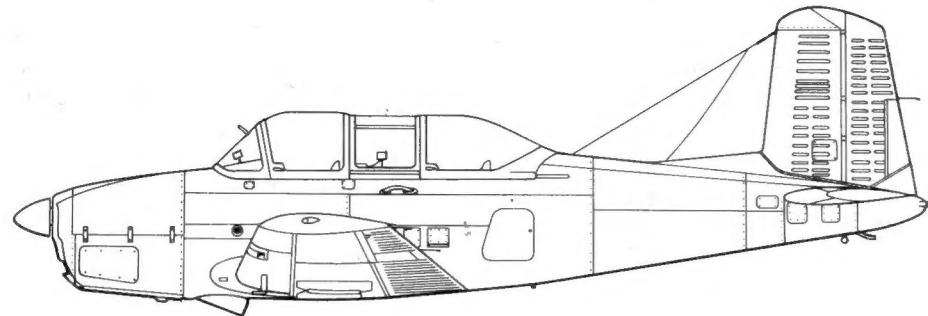
The first production T-34A on a test flight from the Beechcraft facility in Wichita. It carried the Beech serial number G-7 and the USAF serial 52-7626. The aircraft was overall Natural Metal with Black anti-glare panels. (Beechcraft)

T-34A production numbers and USAF serials are as follows:

T-34A-BH: 52-7626 to 7685, sixty built (Beech numbers G-7 to 66). 53-3306 to 3395, ninety built (Beech numbers G-67 to 156). 53-4157 to 4206, fifty built (Beech numbers G-257 to 306). 55-140 to 289, 150 built (Beech numbers G-697 to 846).

T-34A-CCF: 52-8253 to 8286, thirty-four built (CCF numbers CCF-34-26 to 59). 53-4091 to 4156, sixty-six built (CCF numbers CCF-34-60 to 125). The first twenty-five CCF aircraft were those used briefly by Canada and then exported to Turkey.





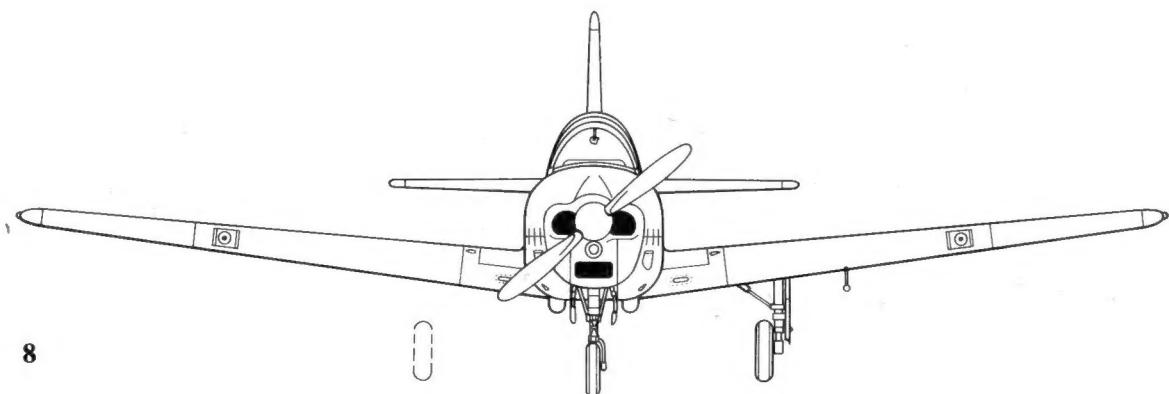
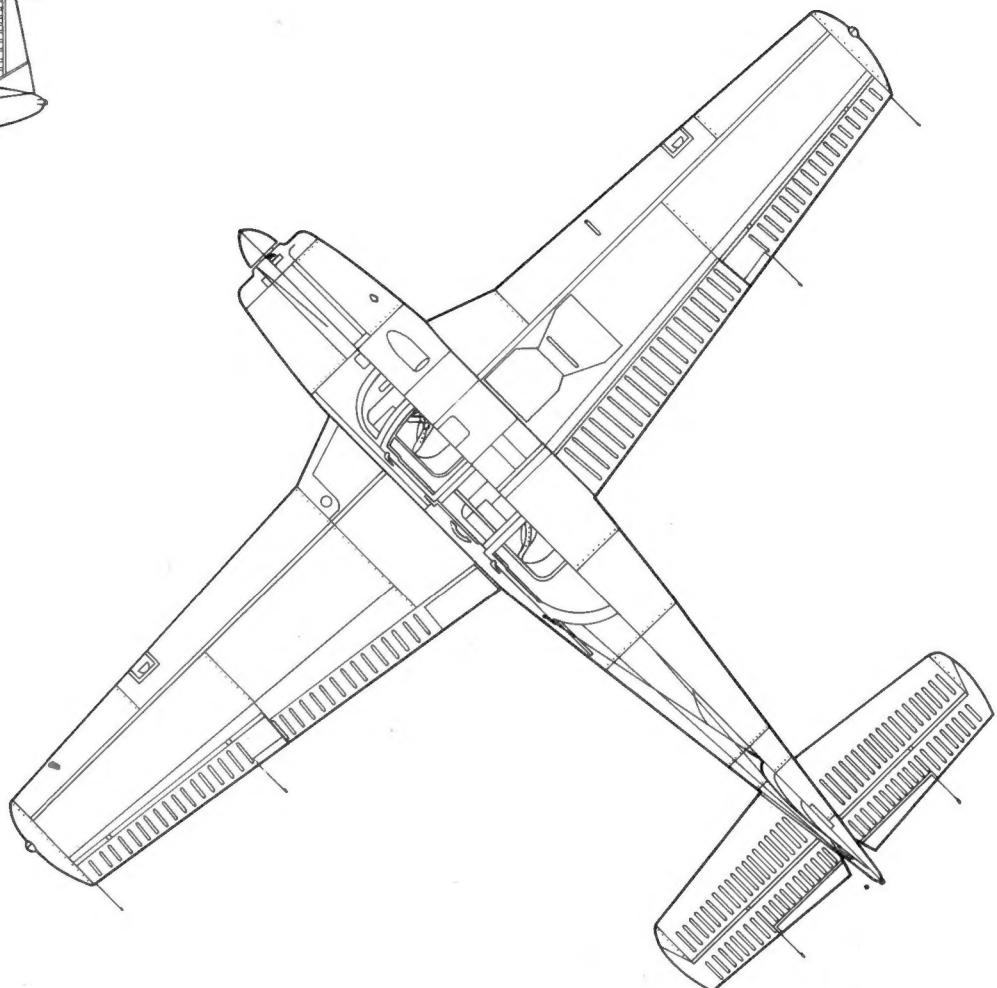
Specifications

Beechcraft T-34A Mentor

Wingspan 32 feet 8 inches
Length 25 feet 9 inches
Height 9 feet 6 inches
Empty Weight 2,170 pounds
Maximum Weight 3,050 pounds
Powerplants One 225 hp Continental O-470-13 air cooled engine.

Armament None

Performance
Maximum Speed 155 knots
Service ceiling 20,000 feet
Range 540 miles
Crew Two





When T-34A 55-287 (Beech serial G-844) rolled off the production line, it was followed by only three additional T-34As. The White object in the rear cockpit was an instrument flying hood used to instruct students on instrument/blind flight conditions. (Beechcraft)



AT-34A shares the flight line at Cungaree Air Force Base, South Carolina during June of 1954 with a North American F-86D Sabre. The aircraft carried serial 53-4116; however, Beech production records have no such serial number on file. (Norman E. Taylor)

Production T-34A Mentors did not have a grill in front of the carburetor air intake. Early in the operational career of the Mentor, a series of nose gear failures was traced to the nose gear door retract rods, and the doors were ordered removed. (USAF)



A lineup of nine T-34As tied down on the ramp at Bainbridge Air Base, Georgia, during 1957. The Air Force used the Mentor as a primary trainer between 1953 and 1961. During 1961 the Air Force changed over to an all jet training program and the T-34s became surplus. (USAF)



U.S. AIR FORCE
27627



This T-34A is the second production aircraft and was assigned to Craig Air Force Base. The aircraft was overall Natural Metal with Flat Black anti-glare panels and carried the Training Command Insignia and the name Craig on the nose. (USAF via Robert F. Dorr)

This Alaskan Civil Air Patrol T-34A being fueled at Merrill Field, Anchorage, Alaska, on 20 October 1969 still carried original Air Force radio equipment. The Mentor also carried high-visibility markings on the tail and wing. (Norman E. Taylor)



T-34B Mentor

During the 1950s, the Navy was also conducting a search for a new primary trainer. The Navy evaluation pitted the Temco Plebe against the YT-34 Mentor. The Plebe was an all metal, tricycle landing gear aircraft powered by the same engine as the Mentor.

When the Navy evaluation was completed, the Mentor was selected as the best trainer available. The Navy, however, could not just adopt an Air Force aircraft without a number of changes. Besides the fact that the Navy did some things differently than the Air Force, the Department of Defense had rules that mandated a sharing of R&D costs between services that use the same aircraft. The Navy wanted the Mentor, but not the R&D costs. One solution was to make enough changes to the aircraft so that it could be classified as a 'new' model.

These changes included a castering (non-steerable) nosewheel, adjustable rudder pedals, seats that adjusted only in the vertical, an additional one degree of dihedral in the wings, an on-off fuel selector switch (with fuel tanks feeding simultaneously) and a spring system to increase elevator forces. Externally, the aircraft differed from the T-34A in having the small fillet at the base of the rudder deleted and a bulged battery compartment door to accommodate a different battery system. It also had an arrowhead antenna on the rear fuselage.

With these changes, the Navy ordered the aircraft into production under the designation, T-34B. Beech built a total of 423 T-34Bs between 1954 and 1958 with the first aircraft being delivered exactly six months after the contract was signed. The T-34Bs were built in two batches and carried BuNos 140667 to 140956 (290 aircraft, Beech numbers BG-1 to BG-290) and BuNos 143984 to 144116 (133 aircraft, Beech numbers BG-291 to BG-423).

The minimal changes made in the T-34B would not seem to make much difference in the way the two aircraft handle, but there is a noticeable difference in roll rate, stability, and elevator stick forces. The T-34B, with the one degree of additional wing dihedral, is more stable than the T-34A. The extra dihedral also detracts from aerobatic agility, though the Navy training syllabus contained all the standard aerobatic maneuvers.

The Navy primary training program called for thirty hours of dual instruction in the T-34B before the student progressed to the T-28. The Navy used the T-34B for over twenty years, accumulating over 100,000 flight hours per year. The first Navy T-34B unit was VT-1 of Training Wing Six. VT-1 was based at NAS Saufley Field, a satellite field of the NAS Pensacola, Florida, training complex. VT-1 remained the sole T-34B training squadron, with a complement of up to 135 Mentors, for over fifteen years before VT-5 was also designated a T-34B squadron and assigned to NAS Whiting Field.

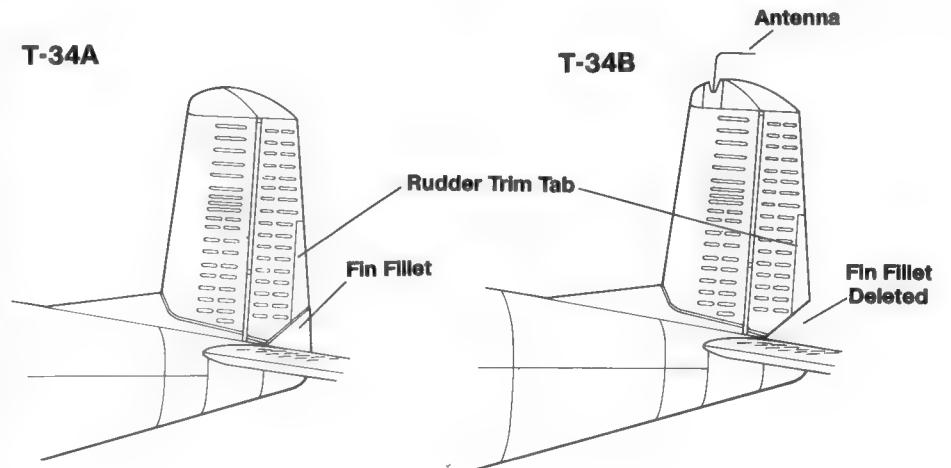
One of VT-1's Mentors recorded a total of 5,115 airframe hours: including 16,459 landings, 17,904 stalls, 3,401 spins, and 4,604 loops. Because of its demonstrated longevity, the Navy decided to machine-test one airframe in order to determine the Mentor's ultimate load life. After 15,000 hours of testing the aircraft was determined to be still airworthy. Upon conclusion of the test, the Navy declared that the T-34B had no airframe life limit.

Navy students usually received eleven weeks of training before beginning flight training in the T-34B. The typical flight syllabus was nineteen to twenty flights with the first twelve being dual instruction flights. After solo, the student progressed to aerobatics and formation flights in the Mentor, before going on to the T-28 for shipboard training.



The first T-34B (BuNo 140667, Beech serial BG-1) on its initial flight from the Beech factory. The notched rudder and the arrowhead antenna on the rear fuselage were common to the T-34B. T-34Bs were delivered to the Navy in overall Trainer Yellow with Dark Green anti-glare panels. (Beechcraft)

Vertical Fin





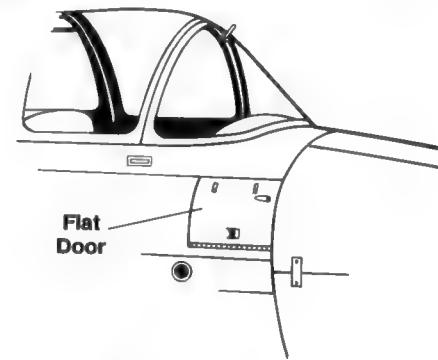
A Navy instructor pilot discusses the planned maneuvers scheduled for this training hop with his student in front of an overall Trainer Yellow T-34B. Their 1950s vintage flight suits were Tan and the backpack parachutes were Olive Green.



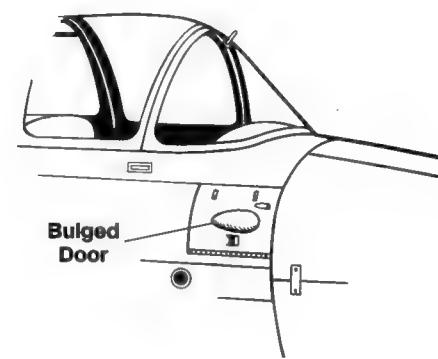
An Overall Trainer Yellow T-34B of VT-1 at NAS Saufley Field over the Florida panhandle. The aircraft had Dark Green anti-glare panels, a Red-Brown spinner and Black lettering. This Mentor has had the canopy replaced during maintenance. Production canopies had natural metal canopy framing, while replacement canopies had Yellow framing. (U.S. Navy)

Battery Compartment Door

T-34A



T-34B





T-34Bs on the flight line at NAS Saufley Field during 1967. The aircraft are in overall insignia White with International Orange on the nose, tail and wing tips. There were rarely more than 175 of the 423 T-34Bs manufactured in service at any one time. (U.S. Navy via Norman E. Taylor)

A flight of T-34Bs practice an echelon formation over Florida during the late 1950s. The tail codes have changed and the location of the individual aircraft number was moved from on the nose to just under the windscreen. The aircraft retained the overall Trainer Yellow paint scheme. (U.S. Navy)



BuNo 140676 was the tenth T-34B off the production line and was assigned to LT Stiles at NAS Pensacola, Florida during July of 1955. LT Stiles is using the Gold painted post-war, football style flight helmet with separate goggles. The stripe around the nose was the Red propeller warning stripe. (U.S. Navy)

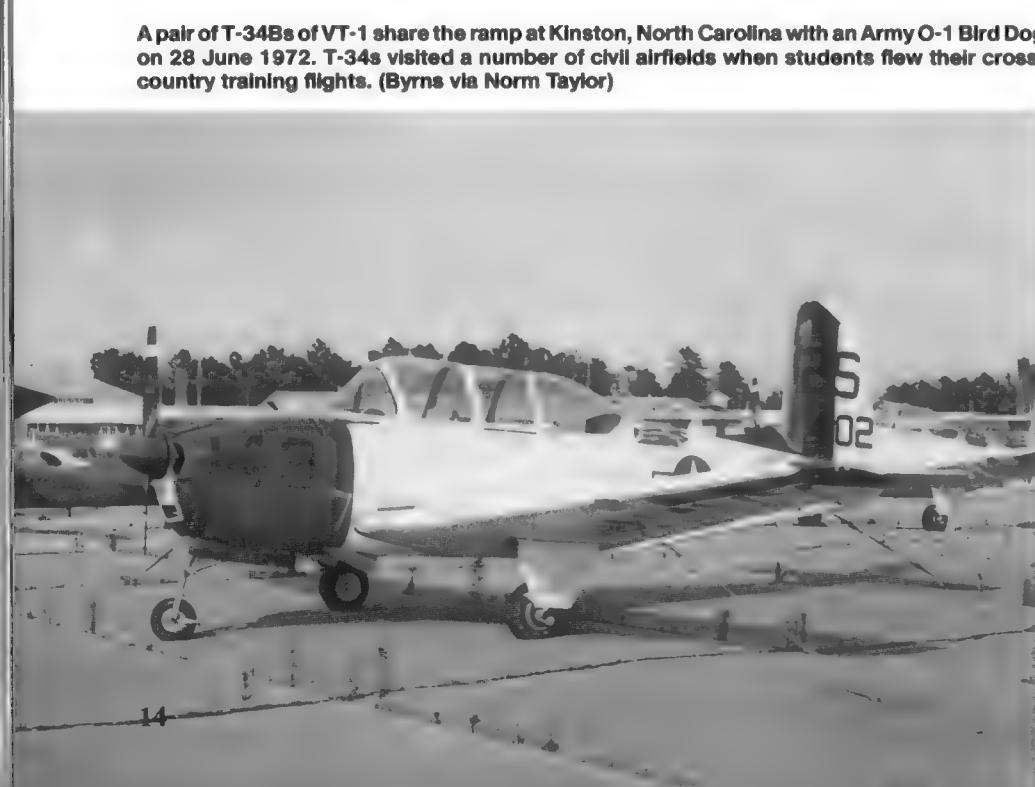




This T-34B (BuNo 140787), on the ramp at NAS Saufley Field during 1969, has had the radio antenna normally carried on the fuselage behind the cockpit removed. (U.S. Navy)



A T-34B on final approach for landing at NAS Corpus Christi, Texas, during July of 1970. The aircraft side number (MODEX), 001, is repeated in small Black numbers high on the vertical fin. (U.S. Navy)



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The Navy rarely flew more than 175 of the 423 T-34Bs built, using the remainder for spare parts depot. These T-34Bs were stored at NAS Pensacola and stripped for whatever parts might be needed to keep the active inventory flying. (Charlie Nogle)



This pile of scrap are all that remained after one base commander determined that the T-34Bs being used for spare parts were no longer needed and burned the hulks. (Charlie Nogle)

This T-34B (BuNo 140950) of VT-5 on the ramp at NAS North Island, San Diego, California during May of 1978 was a long way from its home base in Florida. The Navy also had problems with the nose gear of the T-34B and, like the Air Force, deleted the nose gear doors. (Norman E. Taylor)





This T-34B (BuNo 144105) was flown by Navy recruiters out of NAS Dallas, Texas. A number of T-34s were assigned to the Recruiting Command to give prospective aviation officer candidates a taste of flight. This T-34 is on a visit to Midland, Texas on 26 September 1985. (Norman E. Taylor)

These T-34Bs have been overhauled and repainted for assignment to recruiting districts during April of 1983. The aircraft carry Gold Navy wings painted on the nose and the legend FLY NAVY on the tail. This was the final mission for the T-34Bs.



The Navy recruiter from Columbia, South Carolina is strapped into the recruiting district's T-34B (BuNo 143996) at Florence, South Carolina, on 6 April 1985. The canopy emergency release handle is Red with White lettering. (Norman E. Taylor)



Export Mentors (Model B-45)

Beechcraft built a total of 161 T-34As for export under the company designation, Model B-45. Externally these aircraft were identical to the T-34A, and the only difference between these Mentors and those built for USAF was a different instrument panel layout and the use of vacuum instruments in place of electric instruments and inverters. Beech also shipped seventy-five disassembled T-34s to Argentina for assembly and eventual shipment to the Argentine Air Force and other Latin American countries.

The first foreign buyer of the T-34 was Chile, which purchased an initial batch of thirty-six aircraft for use by the *Escuela de Aviacion Capitan Avalos* during 1953. These were followed by an additional ten aircraft during 1956 and another twenty-six (some being ex-USAF T-34As) at later intervals. These aircraft carried serials FACH 101 to 166. Six aircraft were used by the Chilean Navy.

Columbia received forty-two T-34As and six ex-U.S. Navy T-34Bs. These were used by *Escuela Militar de Aviacion*. The T-34As carried serials 301 to 342. The ex-Navy T-34Bs were BuNos 140685, 140728, 140753, 140763, 140801, 144021.

Argentina received fifteen T-34As (B-45s) from Beech, serialized E-001 through E-015. An additional seventy-five were assembled in Argentina by *Fabrica Militar de Aviones* (FMA) at Cordoba from parts supplied by Beech. Most were used by the *Escuela de Aviacion Militar*; however, a number of armed Mentors (one .30 caliber machine gun in each wing and underwing pylons for light ordnance) went to *I Grupo de Ataque* of the *VII Brigada Aerea*. These aircraft were subject to a somewhat higher loss rate, common to other "combat" aircraft.

A number of other Latin American nations received B-45s or surplus T-34s. Ecuador received at least two T-34As (serials TH-334 and TH-344). Mexico received four T-34As which were assigned to the Mexican Navy. Peru got six T-34As which were used by the *Academia del Aire*. El Salvador took delivery of six T-34As for use by the *Escuela de Aviacion Militar*.

Uruguay was one of the larger T-34 operators in Latin America, having a total of at least forty Mentors, of which twenty-five were ex-U.S. Navy T-34Bs. One T-34B was used by the Uruguayan Navy having been delivered during 1966. Another major user of the T-34 was Venezuela which took delivery of forty-one Mentors. Of these, thirty-four went to the *Escuela de Aviacion Militar* where they were initially serialized E-001 to E-034 (these were later changed to four digit numbers). The remaining seven were delivered to the Miguel Rodriguez Civil Aviation School, which was controlled by the Ministry of Communications (serials beginning with MR).

In Europe, Spain received twenty-five ex-USAF T-34A Mentors, which were given the designation E-17 in Spanish service. These aircraft were used by the *Academia General del Aire* at San Javier.

In the Far East, Indonesia and the Philippines operated the Mentor. The Philippines flew thirty-six Japanese built T-34s, while Indonesia had one Japanese built aircraft, twenty T-34As supplied by Beech and a number of ex-USAF T-34As.

Canada only used the Mentor for a short time. This Royal Canadian Air Force T-34A was overall natural metal with Yellow tail surfaces, wing tips, and wing trailing edges. The anti-glare panels were Flat Black. (Lou Drendel)



This overall natural metal T-34A of the Chilean Air Force has an Olive Drab anti-glare panel. The rudder is Insignia Blue with a White star. These aircraft were later camouflaged. A number of Chilean T-34s have been returned to the U.S. (Dan Hagedorn via Nick Waters)





This T-34A of the Chilean Air Force is camouflaged in Tan and Olive Drab over Light Gray undersurfaces. Chile was one of the largest foreign users of the Mentor, receiving a total of seventy-two T-34As. (Charlie Nogle)



This T-34A of I Grupo de Ataque, Argentine Air Force is armed with a .30 caliber machine gun in each wing and underwing pylons. Armorer load a practice bomb dispenser onto the pylon for an air-to-ground gunnery mission. (Dan Hagedorn via Nick Waters)



This overall natural metal T-34A was used by the Colombian Air Force as a primary trainer. The rudder stripes were (top to bottom) Yellow, Blue and Red. The aircraft had Black anti-glare panels and wing walks. (via Nick Waters)



The Argentine Air Force also operated the T-34A Mentor in the primary training role. This T-34A was one of seventy-five aircraft assembled in Argentina from Beech supplied kits. (via Nick Waters)



This T-34A was assigned to the *Escuela de Aviación* in Venezuela and was one of thirty-four aircraft received during 1959. The E prefix to the serial stands for *Escuela* or school aircraft. (Nick Waters)



This overall natural metal T-34A was flown by the Ecuadorian Air Force and carried the serial 111 on the fuselage in Black. The rudder striping was (top to bottom) Yellow, Blue and Red. (via Nick Waters)

This T-34A was one of seven T-34As that were used by the Miguel Rodriguez Civil Aviation School which was under the control of the Ministry of Communications. All these aircraft carried MR serial numbers. (Dan Hagedorn via Nick Waters)



Spanish Air Force T-34A Mentors were painted in overall Aluminum with high-visibility Red markings on the vertical fin and nose. The rudder markings were White with a Black cross of Saint Andrew.





A Fuji-built T-34A carrying Philippine Air Force markings takes off for a test flight from the Fuji factory. Thirty-six aircraft were supplied to the Philippines by the Japanese as war reparations. (Fuji Heavy Industries)

The Philippines received a number of Fuji-built T-34As. Originally delivered in overall Light Gray, these aircraft were later camouflaged Tan and Medium Brown over Light Gray. They were powered by 260 hp Continental engines. (Charlie Nogle)



A T-34A of the TNI-AU (Indonesian Air Force) sits on a "Beech Jack" dolly for gear retraction tests. The "Beech Jack" was a specially designed piece of ground support equipment solely for use with the T-34. (Charlie Nogle)



Fuji T-34

By April of 1952, American Military Rule in Japan had come to an end and a number of Japan's aircraft manufacturers had been re-established. These included Mitsubishi, Kawasaki, and Shin-mewa. *Fuji Jukogyo Kabushiki Kaisha* (Fuji Heavy Industries, Ltd) was established during 1953 as the successor to Nakajima Aircraft Company. Nakajima had been in existence since 1914 and had built some of Japan's best military aircraft (Chikuhei Nakajima, the company's founder, had died during 1949 at the age of 66).

In addition to the lifting of military rule, the American military decided to rebuild Japan's defenses and established the National Safety Force (*Hoantai*) and the Japanese Maritime Guard (*Kaijo-Keibitai*). The T-34 was selected to be the first aircraft for the *Hoantai* and deliveries of the first twenty T-34As (B-45) began during March of 1954. Rumor has it that one of these was dropped on the dock during unloading and was damaged beyond repair. This was never confirmed, but it would explain the one aircraft disparity in accounts of Japanese Mentors.

Ten aircraft were taken on charge by the *Hoantai* (serials H-1101 to 1110) and the remaining aircraft were passed to the *Kaijo-Keibitai*. On 1 July 1954, the Japanese Air Self Defense Force (JASDF) was established and eighteen of the nineteen surviving Mentors were passed to the JASDF. The last aircraft was issued to the Japanese Maritime Self Defense Force.

The first Japanese flying training school had been established at Hamamatsu AB during October of 1952. During 1953, the Japanese Safety Force, or NSF (*Hoan Tai*) decided to acquire a new trainer and selected the T-34 during October of that same year. A license agreement was concluded with Beechcraft on 17 November 1953, enabling Fuji to carry on the Nakajima tradition by building the T-34 in Japan.

The first fifty-five Fuji-built T-34As were produced in production batches coded as Group II through IV, depending upon the percentage of Beech-built parts. All Group II and higher Japanese built T-34s were produced with aluminum vice magnesium control surfaces, floor boards and other parts. The first two Japanese built T-34s made their maiden flights on 12 March 1954, at Kanoya Air Base. Fuji built a total of 162 T-34As, thirty-six of which were exported to the Philippines (as war reparations), while one went to Indonesia. The remaining T-34s were built for the Japan Air Self Defense Force (JASDF) which phased out T-34A operations during 1982. The last flight of a JASDF T-34A was by Air Rescue Command on 11 August 1982.

The Japanese Maritime Guard was established during 1952, later being re-designated as the Japan Maritime Self Defense Force (JMSDF). Nine T-34As were transferred from JASDF, one of which was destroyed in a crash. During 1958 the JMSDF received an additional eleven T-34As from the JASDF, beginning with serial number 9002.

The Japan Ground Self Defense Force (JGSDF), or Army, received nine T-34As from JASDF during 1964 (serials 60501 to 60509). These aircraft were all phased out of active service during 1978.

To meet a Japanese Ground Self Defense Force requirement for a liaison aircraft, Japanese engineers decided to modify the basic Mentor airframe. The new aircraft, known as the LM-1 (LM stands for Liaison Mentor) Nikko was a four passenger variant of the basic T-34A. The aircraft was modified with a new center fuselage section with side-by-side seating for four passengers. The LM-1 made its first flight on 7 June 1955. Twenty-seven LM-1s were built (serials 21001 to 21027) between 1956 and 1957 for the JGSDF.

The LM-2 was a modification of the LM-1 with a more powerful engine. Three LM-2s were built from LM-1 airframes, two during 1963, and another during 1966 (serials 2151-2153). The LM-2 differed from the LM-1 in the installation of a 340 hp IGSO-480-B1A6



This T-34A was one of the original Beech-supplied aircraft and was assigned to the 11th Training Group. The Mentor was Dark Orange over natural metal with a Yellow spinner. The unit markings were Red (Mt. Fuji) and Blue. (Norman E. Taylor)

Lycoming engine, which required a new cowling with an extra cooling air scoop on the port side and longer exhaust pipes. All LM series aircraft were built with funding from the U.S. Military Assistance Program, which meant that when they were phased out of Japanese service, they were required to be made available for return to U.S. control. This enabled the Valiant Air Command, a private warbird flying museum in Titusville, Florida, to acquire several of the LMs during 1983.

The Fuji XKM was a prototype four seat aircraft powered by the 340 hp Lycoming engine and outfitted with full instrument flight rules (IFR) radio and navigational equipment. It was modified from a standard LM, at company expense, for the Japanese general aviation market. The XKM made its first flight on 1 December 1958 and on 9 December 1959 it set an FAI Class C-1-C altitude record of 32,536 feet with Tsurutoshi Yoshizawa at the controls. One production KM-1 was built for pilot training for the Japanese Department of Transportation.

The JMSDF wanted a side-by-side trainer to replace the SNJs used for pilot training and Fuji modified the KM-1 to meet this requirement under the designation KM-2. The aircraft featured side-by-side seating, the exit door was moved to the port side, a dual instrument panel was installed along with lever type throttles, roof-top windows were added and the aircraft was powered by a Lycoming IGSO-480-A1C6 (direct fuel injected) engine. The first of sixty-two KM-2s built for JMSDF were delivered in September of 1962. The first twenty-eight were serials 6231 to 6258 and were phased out of service during 1969. Thirty-four advanced KM-2s (serials 6259 to 6262) were completed in 1982 and are still in service. The advanced KM-2 can be distinguished from early KM-2s by the use of a larger propeller spinner and nose air intake. All these aircraft were delivered in an overall Yellow paint scheme.

The LM and KM series followed the basic Beechcraft Bonanza seating arrangement, with the pilot in the port front seat. The rear seat is a bench type in both aircraft while the KM series has provision for a fifth seat in the middle between the front and rear seats. The military control sticks were replaced by control wheels. The rear seats can be

removed to facilitate cargo carrying and a section of the cabin roof can be removed to load bulky cargo. The cabin section is reinforced with a built-in roll cage to provide crash protection for the passengers.

The KM-2B was built to meet a JASDF requirement for a new basic trainer. The aircraft returned to the standard tandem two seat arrangement of the T-34, but used the same 340 hp Lycoming engine of the KM-2. It was also equipped with more modern avionics, including King KTR-900A VHF radio, King KDF-800 ADF, Collins ICS-356C4 intercom, and ATC TACAN and transponder. The prototype KM-2B made its first flight on 26 September 1974 and it received Japan Civil Aeronautics Board category A certification on 28 November 1974. The following year, the JASDF announced that it had selected the KM-2B to replace the T-34A in the primary trainer role under the designation, T-3. Fifty T-3s trainers were built and delivered between 1978 and 1982 carrying serials 5501 to 5550.

The JASDF primary training syllabus included seventy hours in the T-3 with either the 11th *Hiko Kyoikudan* (Flying Training Wing) at Shizuhama or the 12th *Hiko Kyoikudan* at Hofu. The *Koku Jikkendan*, Air Proving Wing (APW) operated two T-3s at Gifu (serials 501 and 502). The APW was reformed as the Flight Development and Evaluation Wing (FDEW) during March 1989. Two TL-1s were built for the JGSDF as modifications of the KM-2 (serials 81001-2). They were both delivered during October of 1981.

Fuji modified one company owned KM-2 to KM-2B KAI (Kai is translated as "advanced" or "modified") during 1984 with the installation of a 350 shp Allison 250-B17B turbine engine. The KM-2 KAI made its first flight on 28 June 1984. This was the prototype for the KM-2D, although it featured the conventional tandem two seat cabin.

During March of 1987, Fuji received a contract to build KM-2 KAI update kits for KM-2s in JMSDF service. The first flight of a production KM-2 Kai was on 27 April 1988 under the designation T-5. In addition to the installation of the Allison turbine engine, the T-5 differs from the KM-2 in having a four place wide cabin and a swept vertical fin and rudder. The first T-5 was delivered to JMSDF during August of 1988, followed by two additional aircraft during March of 1989. All three were delivered to Ozuki Air Base the following Winter after evaluation by VX-51 at NAF Atsugi. Six additional T-5s are scheduled for delivery during March of 1990.

During the 1960s, one T-34A (serial 51-0357, CG-32) was modified for the JASDF with a machine gun armament. It was tested by the APW at Gifu Air Base and was the only Japanese T-34 to carry armament.

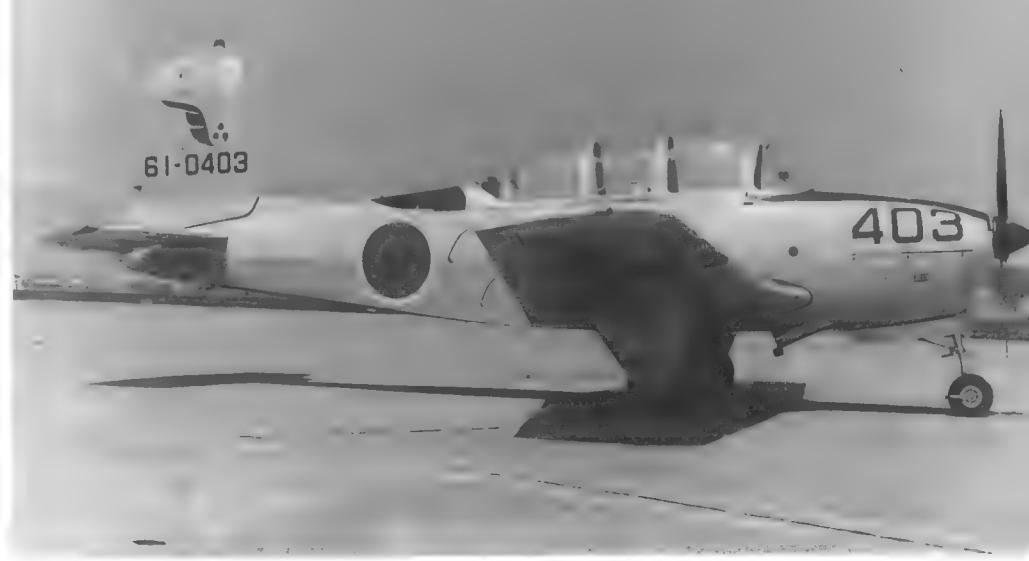
The foregoing was based on information supplied by Shinichi Ohtaki.

This Fuji T-34A, on the ramp at Misawa Air Base on 31 August 1973, was assigned to the 11th Training Group, at Shizuhama Air Base. The tail markings represented Mount Fuji and the Pacific Ocean. (Norman E. Taylor)





A T-34A of the Japanese Air Proving Group shares a wet ramp with a JASDF F-86 Sabre on 30 September 1973. The Air Proving Group (APG) later became the Air Proving Wing (APW) and, still later, the Flight Development and Evaluation Wing (FDEW). (Shinichi Ohtaki)



A Fuji-built T-34A Mentor of the 12th Training Group during a visit to Itazuke Air Base on 16 April 1974. The aircraft was home based at Hofu Air Base. (Robert F. Dorr)

It is a common practice for Japanese student pilots of the 11th Training Group to tow a modified wind sock on their first solo flight as a warning to other aircraft in the local area. (Shinichi Ohtaki)





Fuji-built T-34 Mentors apparently did not have the same nose gear retraction problems that plagued Beech-built T-34s. As a result, the nose gear doors were never removed from Japanese T-34s. (Shinichi Ohtaki)



A T-34 of the Japanese Air Self Defense Force Rescue Group takes off from Hyakuri Air Base on 23 July 1973. The unit was home based at Hamamatsu Minami Air Base. (Shinichi Ohtaki)



A T-34A of the 11th Training Group flies over the Japanese coast near its home base at Shizuhama Air Base. This aircraft (serial 41-0311) was the first Japanese built T-34A (B-45) Mentor. (Fuji Heavy Industries)

This T-34 was one of nine assigned to the Japan Ground Self Defense Force (JGSDF). It was overall Dark Green with Black anti-glare panels, International Orange wing tips, stabilizer tip, and vertical fin tips. All lettering is in White. The aircraft was visiting Iwanuma Airport during May of 1974. (Norman E. Taylor)



A T-34A Mentor assigned to Bainbridge Air Force Base, Georgia.



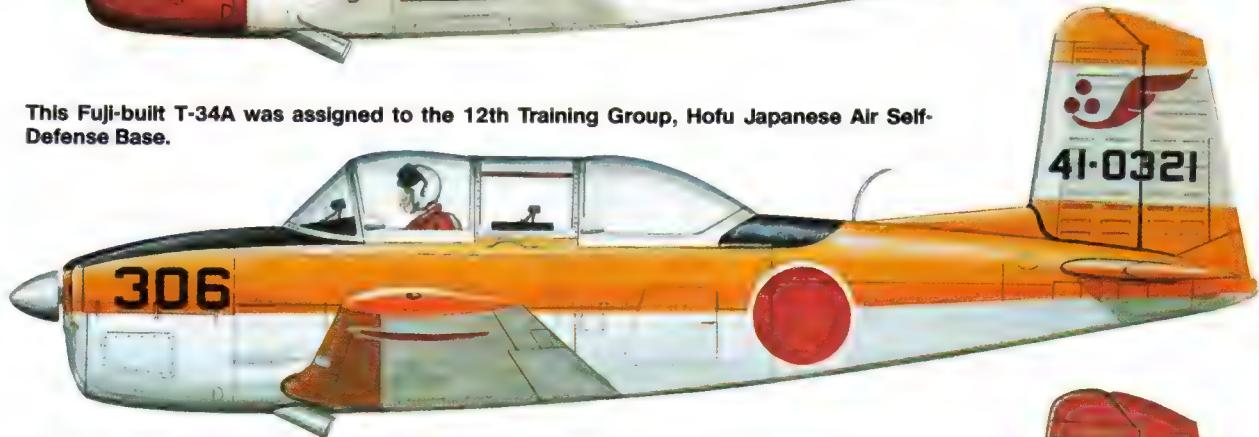
This T-34B carries the overall Yellow delivery scheme, common to all T-34Bs and was used by station pilots at NAS Saufley Field, Florida.



A T-34B Mentor of Training Squadron One (VT-1), NAS Whiting Field, Florida.



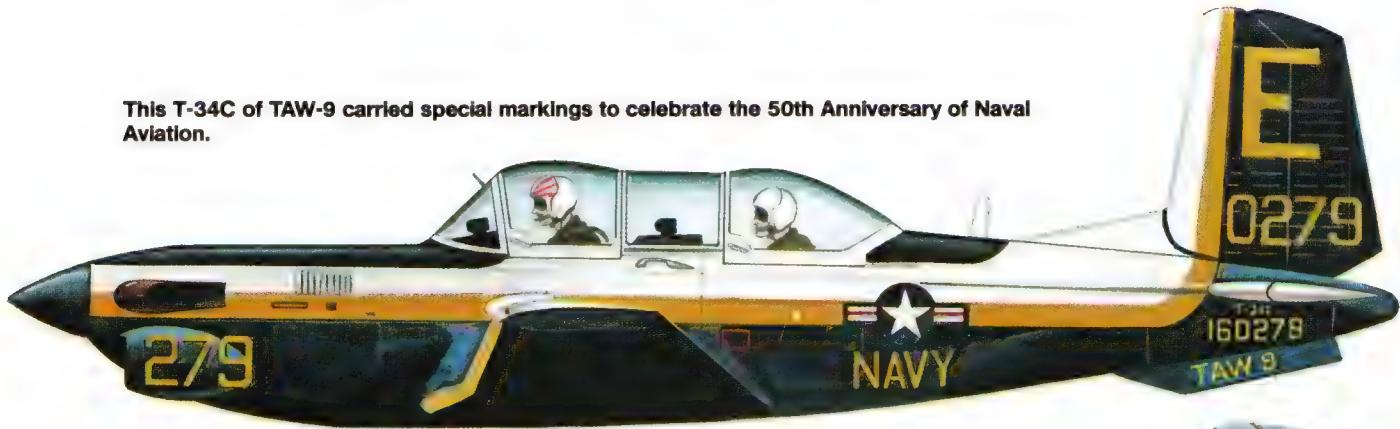
This Fuji-built T-34A was assigned to the 12th Training Group, Hofu Japanese Air Self-Defense Base.



A Fuji TL-1 liaison aircraft of the Japanese Ground Self-Defense Force.



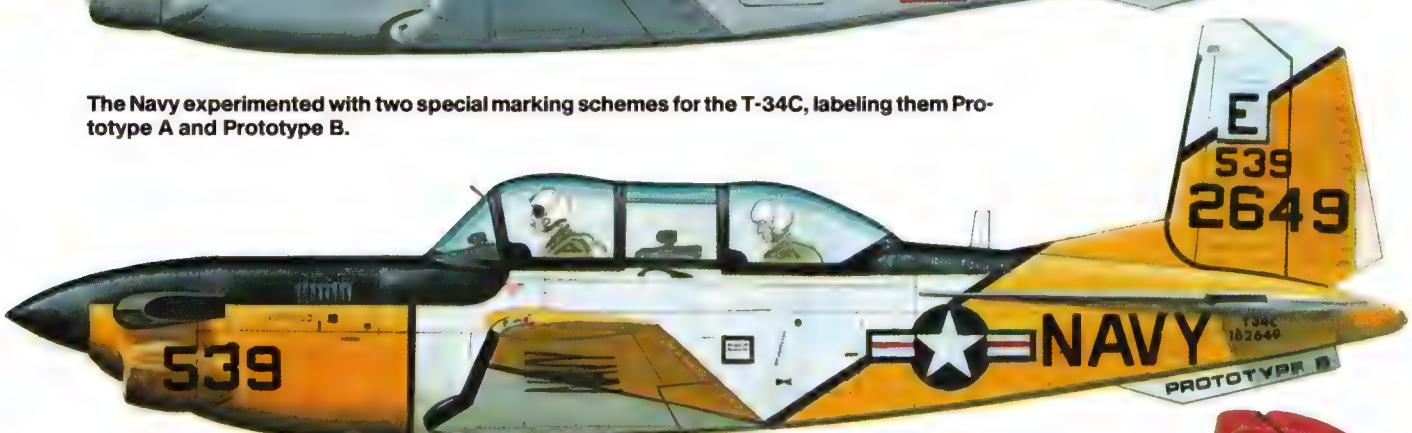
This T-34C of TAW-9 carried special markings to celebrate the 50th Anniversary of Naval Aviation.



A T-34C Turbo-Mentor of the TNI-AU (Indonesian Air Force).



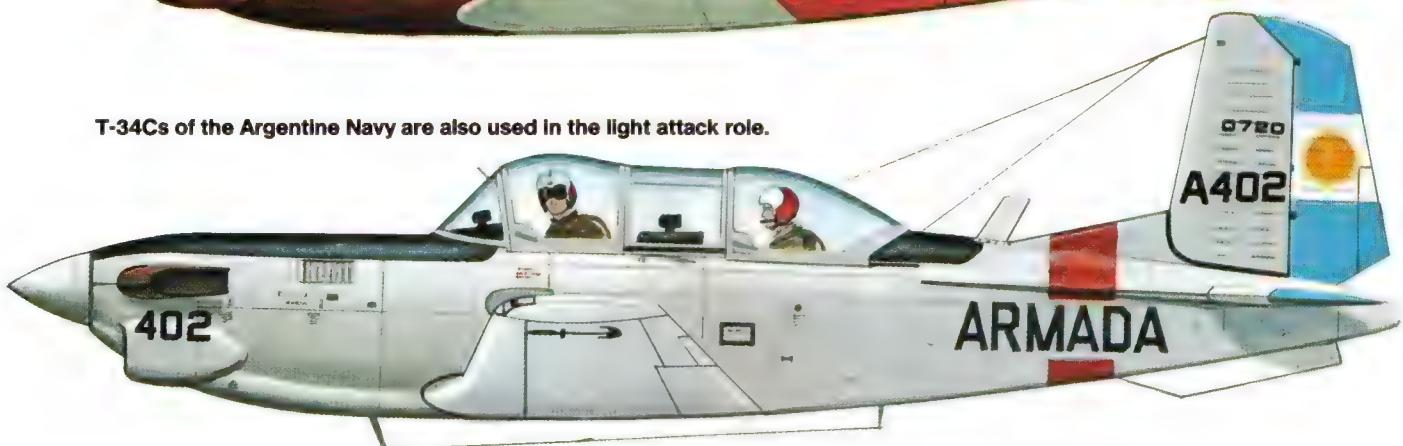
The Navy experimented with two special marking schemes for the T-34C, labeling them Prototype A and Prototype B.



This T-34C is flown by the Nationalist Chinese Air Force on Taiwan.



T-34Cs of the Argentine Navy are also used in the light attack role.





This T-34 was overall natural metal with Yellow fuselage top, wing and horizontal leading edges, and wing tips. The spinner and fin tip were International Orange, while the anti-glare panels were Black. (Fuji Heavy Industries)

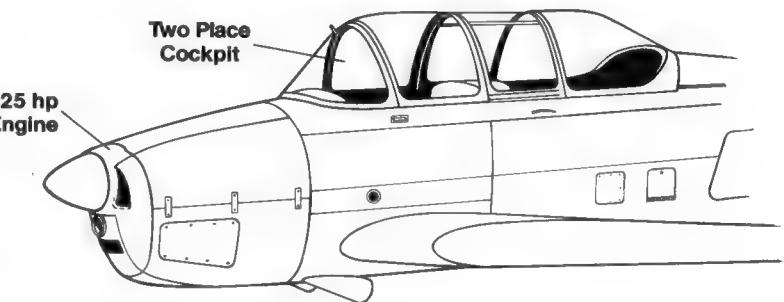
This KM-2 was assigned to Kanoya Air base. All KM-2s (under serial number 6258) have been phased out of service. 6235 later became a gate guard at Kumamoto Air Base. (Fuji Heavy Industries)



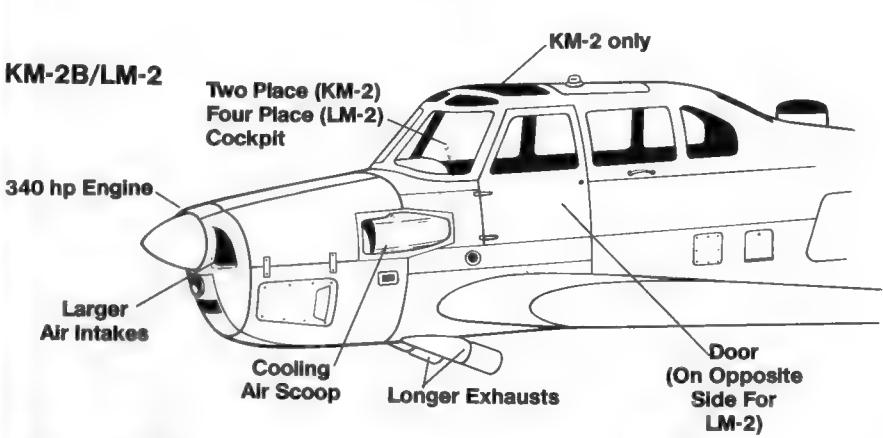
The first LM-1 takes off while the first KM-1 taxis out. Both aircraft were retained by Fuji Heavy Industries for testing and carried civil markings and registrations. (Fuji Heavy Industries)

Cabin Development

T-34A



KM-2B/LM-2



UTSUNOMIYA AIR



The prototype KM-1 carried the designation XKM and was registered JA-3119. It was modified from a company-owned T-34A and was used to set a world altitude record (for its class of aircraft) of 32,536 feet on 9 December 1959. (Fuji Heavy Industries)



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A pair of Fuji LM-1s of the JGSDF's West Division on the ramp at Takayuhara JGSDF Base. The aircraft are overall Dark Green with White lettering and a White outlined Hinomaru. (Fuji Heavy Industries)

This Advanced KM-2 was delivered from the factory in an overall Yellow scheme with the wing tips, fin tip and stabilizer tips in Red. The wing walks, anti-glare panel and spinner were in Flat Black. (Shinichi Ohtaki)





Both the LM-1 and LM-2 had the main cabin door on the starboard side of the fuselage. The KM-2 had the door on the port side. This aircraft was one of three LM-2 stationed at Okadama Air Base. (Shinichi Ohtaki)



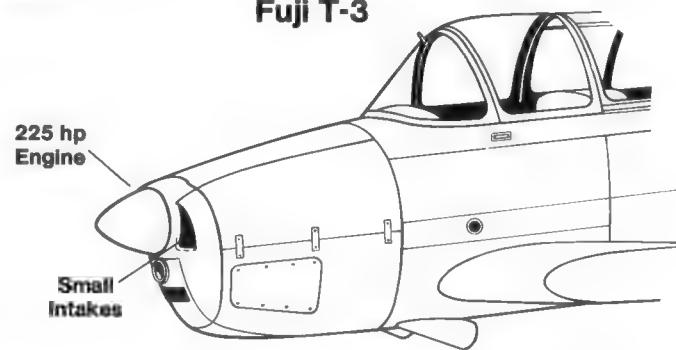
An LM-2 taxis in after its last mission for Japanese Ground Self Defense Force. This aircraft (as well as 21051) was later acquired by the Valiant Air Command, Titusville, Florida. (Shinichi Ohtaki)

The KM-2B reverted to the tandem cockpit of the T-34. The prototype KM-2B made its first flight on 26 September 1974. Redesignated as the T-3, fifty were built to replace the T-34A in JASDF primary trainer units. (Fuji Heavy Industries)

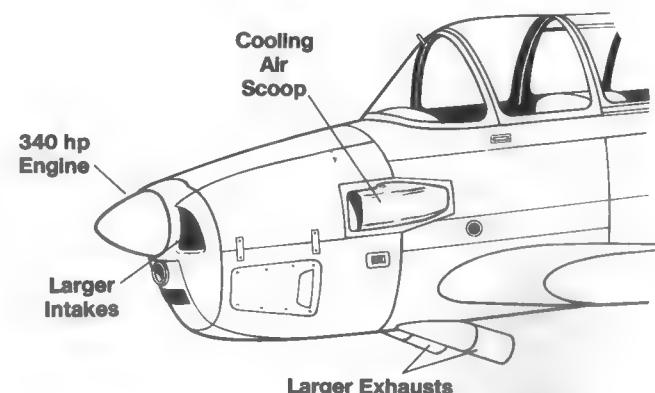


Fuji T-3

T-34A



T-3





The KM-2B (T-3) prototype starts its takeoff roll. The T-3 is powered by a 340 hp Lycoming engine and has considerably more power than the standard Fuji or Beechcraft T-34A. (Fuji Heavy Industries)



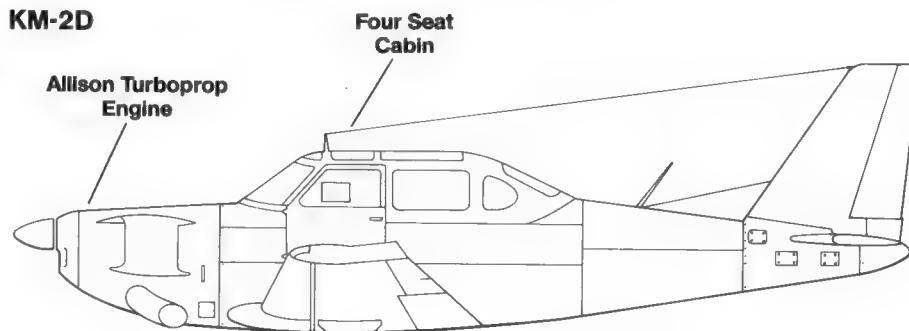
The ultimate Japanese Mentor bears very little resemblance to a T-34. The T-5 features side-by-side seating, swept vertical fin, flared out wingtips and an Allison turbine engine. The side-by-side seating arrangement was used to keep the Center of Gravity far enough forward to retain a relatively (for a turbine) short nose. (Fuji Heavy Industries)



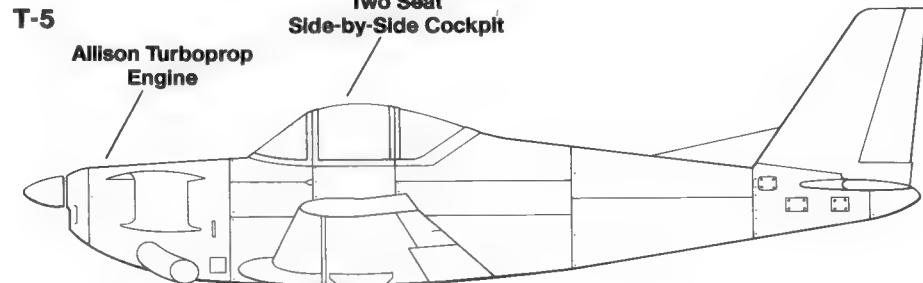
The KM-2D was a private venture four-seat aircraft powered by a 350 shp Allison 250-B17D turboprop engine. The prototype KM-2D flies past Mount Akagi, near the city of Utsunomiya. Utsunomiya is headquarters for Fuji and the site of the former Nakajima Aircraft Company. (Fuji Heavy Industries)

Japanese Developments

KM-2D



T-5



Jet Mentor

During 1955, Beechcraft designed the Model 73 Jet Mentor in response to a USAF/USN requirement for a jet primary trainer. The project was company-funded and made use of as many T-34 (Model 45) components as possible. The Jet Mentor used the wings and tail surfaces of the Model 45 mated with a longer fuselage housing a 920 lbst Continental YJ69-T-9 turbojet. The turbojet gave the Jet Mentor a projected top speed of 295 mph, a service ceiling of 28,000 feet and weighed 4,521 pounds. The Jet Mentor prototype featured full cockpit air conditioning, dual ejection seats, a large bubble canopy and wing mounted speed brakes.

The prototype made its first flight on 18 December 1955, with company test pilot Tom Gillespie at the controls. Although it showed good handling qualities, the Air Force chose the Cessna model 318 (T-37). The Navy also evaluated the Jet Mentor and the test results showed the aircraft was well suited for the Navy mission. The Navy awarded the contract to Temco for the TT-1 Pinto on the basis of cost (both aircraft were powered by the same engine).

The Jet Mentor prototype still exists (in derelict condition) at a Wichita vocational-technical school.

The Jet Mentor used the wings and tail surfaces from the T-34 mated with a longer fuselage housing a 920 lbst Continental YJ69-T-9 turbojet. The Jet Mentor had a projected top speed of 295 mph and a gross weight of 4,521 pounds. It made its first flight on 18 December 1955, with company test pilot Tom Gillespie at the controls. (Beechcraft)



The Model 73 Jet Mentor climbs vertically while on a test flight. The Jet Mentor was a private venture project aimed at the USAF jet primary trainer competition. The Model 73 Jet Mentor had a ceiling of 28,000 feet. (Beechcraft)

T-34C

During the early 1970s, in an effort to streamline and improve primary pilot training, the Navy initiated the Long Range Pilot Training Syllabus (LRPTS) program. One of the goals of this program was the replacement of maintenance intensive and fuel-inefficient piston engined trainers such as the T-34B, T-28B and T-28C.

A Research and Development (R&D) contract was awarded to Beechcraft during 1973 to convert a pair of T-34B airframes to turboprop power (BuNos 140784 and 140861) under the designation YT-34C. Development of the Turbo Mentor began during May of 1973, with the aircraft's first flight being made on 21 September 1973. Beechcraft selected the 715shp Pratt & Whitney PT-6A-25 turboprop for installation in the YT-34C; however, to increase engine reliability and life, the Navy derated the engine to 400 shp through the use of a torque limiter.

Besides the engine, the YT-34C differs from the T-34B in a number of other ways. The two blade propeller was changed to a three blade Hartzell constant speed propeller. The fuselage and canopy of the T-34B was retained; however, the wing was changed. The prototypes used the wing from a Model 55 Baron, while the ailerons and landing gear came from the Model 60 Duke. Additionally, the vertical fin and rudder were enlarged. By using proven components, the design, construction and test program for both prototypes cost the Navy a total of \$400,000. The program probably would have cost ten times that much if the T-34C had been started as a totally new program, designed from scratch.

On 4 October 1973, an ad was placed in the "Commerce Business Daily" for a turboprop trainer to compete with the YT-34C for the Navy production contract. The offer was open to any airframe manufacturer — there were no takers.

As part of the YT-34C program, Beech conducted extensive wind tunnel testing at NASA's Langley research facility using models. These tests revealed that the spin characteristics of the YT-34C could not be predicted with any certainty. To solve this problem, strakes were added to the fuselage sides which ran back and faired into the horizontal stabilizers. Additionally, a pair of short ventral fins were installed on the lower rear fuselage to provide anti-spin authority. Spin testing on the prototypes was done by Beech Test Pilot Bob Stone, who performed 175 spins over a two month period. Stone was later killed conducting terminal air speed tests when the production T-34C he was testing shed both ailerons in a dive.

After completion of factory testing, Beech turned the YT-34Cs over to the Navy for the first Navy Preliminary Evaluation (NPE) tests. The Navy made some fifty-five flights during this phase of the testing and stated that the YT-34C was "a superior trainer to the present trainer aircraft in the inventory." In spite of this assessment, the Navy was unwilling to buy the T-34C until its spin performance could be further improved. As a result, Beech undertook a seven month test program, which included 1,200 spins and fifteen different aerodynamic configurations. Finally, an acceptable configuration was found and the modified YT-34C was compared to the T-34B, T-28, and T-37 and was found to have better spin recovery performance than any of the other trainers.

After completion of this program, the YT-34C was turned over to the Navy for a second NPE which lasted for forty-eight flights. The prototypes were then sent to NAS Whiting Field for an Operational Evaluation (OPEVAL). After successfully completing the OPEVAL, the Navy decided to put the aircraft into production under the designation T-34C. The two YT-34C prototypes still exist: one is on a pylon at the entrance to NAS Whiting Field while the other is now owned by Black Shadow Aviation.



Beechcraft test pilot Bob Stone did much of the early testing of the YT-34C prototypes. The prototype was a T-34B modified to T-34C standards. Stone lost his life while testing the T-34C. (Charlie Nogle)

The Navy bought a total of 334 T-34Cs between November of 1977 and April of 1984. Six of these were transferred to the U.S. Army Special Operations Test Board at Fort Bragg, North Carolina, as replacements for that unit's T-28Cs. An additional nineteen aircraft were later ordered as a second production run for delivery between June of 1989 and April of 1990.

This second production run had an unusual side effect. After years of non-support for civilian T-34 owners and an outright refusal to even consider selling new production T-34s to civilians, Beech relented during 1987 and offered the T-34C to the general aviation market. Since Beech had a production contract for nineteen aircraft for the Navy, they offered the aircraft for purchase by civil pilots at a price of \$1,300,000 (none were ordered). In the event, the only non-military deliveries were to the Algerian national pilot training school, which received six aircraft outfitted with 550 shp engines during 1979.

Avionics installed in the T-34C consist of a Collins ARC-159V UHF radio, VIR-30A VOR navigation equipment, TCN-40 TACAN, PN-101 RMI, and two TDR-950 transponders with CIR-11-2 ELT.

T-34C-1

To meet the need for an armament trainer, Beech produced the T-34C-1, which can also be used to perform the light strike and forward air controller roles. The primary difference between the T-34C and the T-34C-1 are in engine power and armament. The T-34C-1's 715shp engine is derated to 550 shp instead of the 400 shp of the T-34C. This increase in power allows for greater performance and load carrying capabilities. For armament training/light strike, the T-34C-1 has a CA-513 fixed reticle reflector gun sight installed in the front cockpit and four underwing pylons. The inboard pylons are stressed for up to 600 pounds, while the outboard pylons are rated at 300 pounds each (although loads are normally limited to 600 pounds per wing).

The pylons are outfitted with MA-4 bomb racks which can accommodate a variety of weapons including LAU-32 or LAU-59 2.75 inch rocket pods, SUU-11 7.62 MM Minigun pods, BLU-10B incendiary bombs, AGM-22A wire guided anti-tank missiles, TA8X towed target, and AF/B37K-1 bomb containers with practice bombs/flares. All armament controls are in the front cockpit.

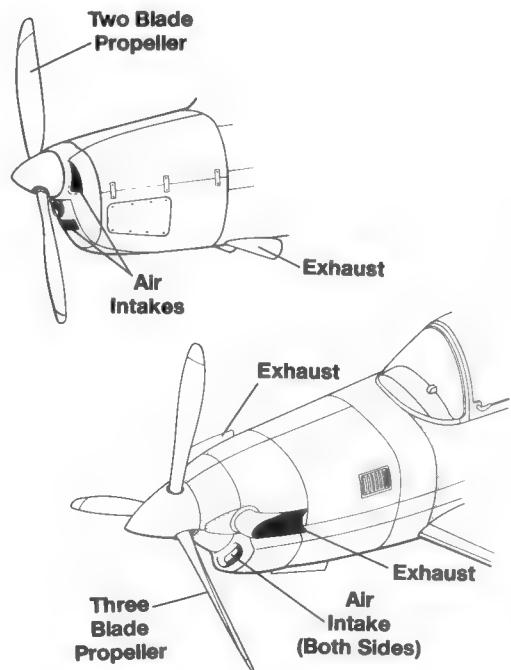
Beech has enjoyed some export success with the T-34C-1 including fifteen aircraft for the Argentine Navy, twenty for the Ecuadorian Air Force and three for the Ecuadorian Navy. Further export orders included four aircraft for the Presidential Guard of Gabon, twenty-five for the Indonesian Air Force, twelve for the Moroccan Air Force, seven for the Peruvian Navy, forty for Taiwan, and three for the Uruguayan Navy.



One of the two T-34C prototypes, which were converted T-34B airframes, is preserved as a gate guard at NAS Whiting Field, Florida. The second prototype was given to the Naval Aviation Museum and later traded to a civilian owner. (Charlie Nogle)

Nose Development

T-34A/B
225 hp Piston Engine



Both these Navy trainers are built by Beechcraft and share the same power plant, the PT-6 turboprop. The T-34C serves in the primary training role and the T-44 serves as a multi-engine and navigational trainer. (via Robert F. Dorr)





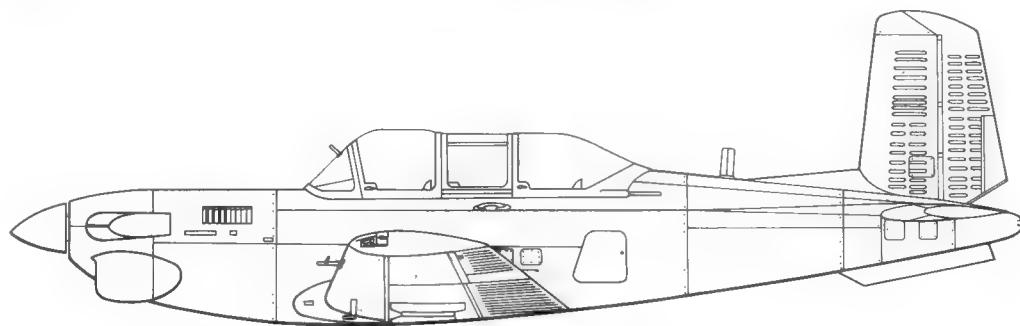
The Army evaluated the T-34C as a possible replacement for the North American T-28C in the test/photographic chase plane role. After the evaluation, the Army selected the T-34C and ordered their aircraft from Navy contracts. (U.S. Army)



Since the T-34C first entered service, Navy trainer markings have changed slightly in both shape and color. The entire rear fuselage and vertical fin are now in Red, as are the outer wing panels and nose. The marking under the windscreens indicates a hoist point on the fuselage and is in Yellow. (Beechcraft)

This T-34C (BuNo 162263), chocked on the ramp at Shaw AFB, S.C. on 5 January 1989, was assigned to the U.S. Army Airborne Test Board (Aviation), at Pope AFB, N.C. The T-34C replaced the T-28 in Army service. (Norman E. Taylor)





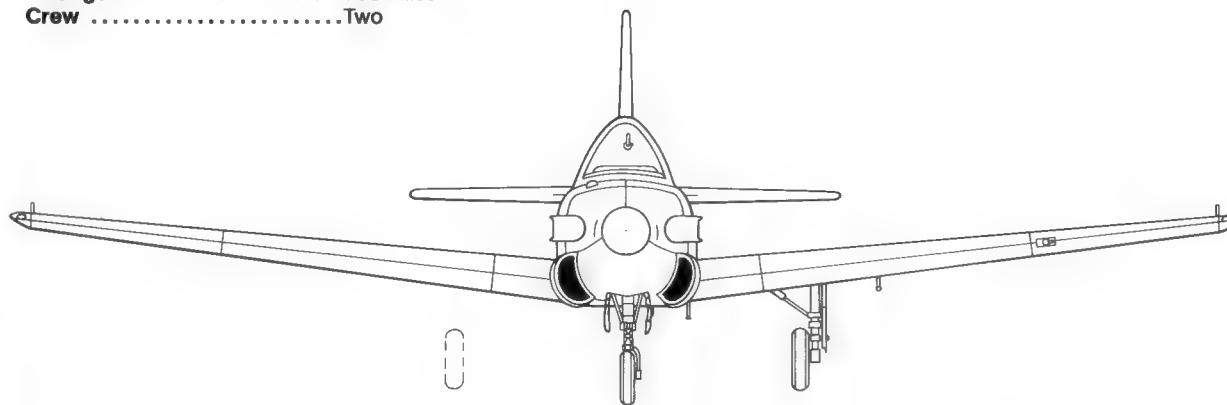
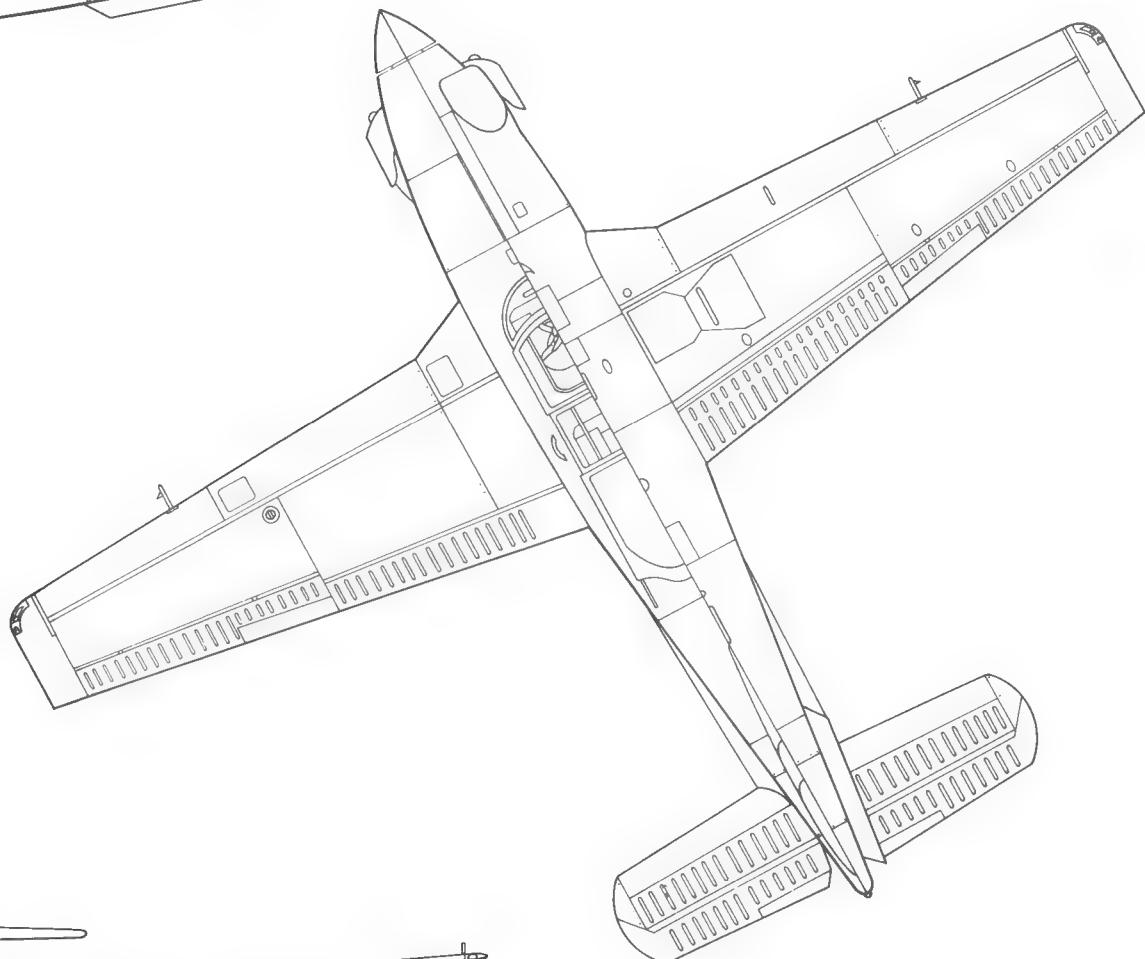
Specifications

Beechcraft T-34C Turbo Mentor

Wingspan 33 feet 3 inches
Length 28 feet 8 inches
Height 9 feet 11 inches
Empty Weight 2,960 pounds
Maximum Weight 4,325 pounds
Powerplant One 400 shp Pratt & Whitney PT6A-25 turboprop engine.

Armament None

Performance
Maximum Speed 214 knots
Service ceiling 30,000 feet
Range 708 miles
Crew Two





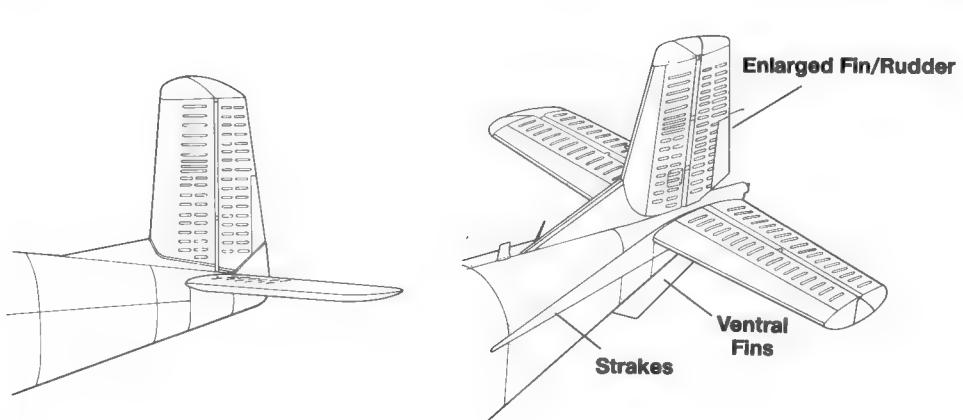
A T-34C (BuNo 160553) of Training Wing Five, based at NAS Pensacola shares the flight line at Myrtle Beach AFB, S.C. on 3 June 1978, with an Air Force T-38 and Navy TA-4. The small round hole in the fuselage above and in front of the national insignia contains the oxygen system pressure gage. (Norman E. Taylor)

Tail Development

T-34A

T-34C

Navy students fly a total of seventy-two hours in the T-34C. 10.4 hours are formation flights, 7.6 hours are devoted to precision landings and aerobatics, with the remainder devoted to familiarization, instrument flying and cross country radio navigation. (via Robert F. Door)





This T-34C-1 was retained by Beechcraft as a company demonstrator and was used to conduct demonstrations to potential buyers. During 1977, the aircraft was shown at the T-34 Association Fly-In at Horse Shoe Bend, Arkansas. (Lou Drendel)

The Ecuadorian Navy was an early export customer for the T-34C. The legend ANE stands for *Aviacion Naval del Ecuador*. The T-34C has four fuel cells, two in each wing, giving it a usable capacity of 130 gallons. (Beechcraft)





The Ecuadorian Air Force also operates the T-34C-1 for both training and light strike missions. The aircraft are camouflaged in Tan, Medium Green, and Dark Green over Light Gray. (Beechcraft via Nick Waters)

The Moroccan Air Force bought twelve T-34C-1s for use in both the training and light strike roles. The aircraft were delivered in a Light Sand and Light Tan camouflage over Light Blue undersides and painted with both civil and military markings. (Beechcraft)





This T-34C-1 was delivered to the *Aviacion Naval Uruguaya* (Uruguayan Navy) which also operates a single T-34B. The national insignia on the wings consists of a circle with Blue upper and lower segments, a White center and a Red bar. The flag insignia on the tail is White with Blue stripes and a Gold Sun. (Beechcraft)

The Algerian national pilot training school operates six civil versions of the T-34C. As government owned aircraft, the T-34Cs carry both civil registrations and military wing roundels and fin flashes. (Beechcraft)



The first two (of six) T-34C-1s for the *Servicio Aeroneval de la Marina Peruana* — Peruvian Navy. The Peruvian Air Force also received six T-34Cs for use by the *Academia del Aire* (Air Academy). (Beechcraft)





The last nineteen T-34Cs for the Navy on the production line at Beechcraft. This order was the reason that Beech was willing to build T-34Cs for civilians. By the time the last T-34Cs were coming off the production line, the T-34C had logged over one million flight hours and had established the lowest accident rate of any aircraft in the Navy. (Beechcraft)



The T-34C-1 company demonstrator was later transferred to NASA for research flying and was registered N510NA. The aircraft was used to test various airfoil designs. (Lou Drendel)



Combat

The T-34C-1 has been used in combat by one nation — Argentina. The Argentine Navy flew the Turbo Mentor in the light strike role during its war with England over the Malvinas (Falklands) Islands.

Fifteen T-34C-1s were purchased by the Argentine Navy for use at the *Escuela de Aviación Naval* and its operational element, the *4.a Escuadrilla Aeronaval de Ataque* based at Punta del Indio Naval Air Station. The unit's primary mission was one of training; however, its secondary mission was that of light attack and for this mission the T-34C-1s could be armed with a variety of gun and rocket pods on underwing pylons.

As April of 1982 drew to a close, the situation in the Malvinas (Falklands) became more serious, with both the British and the Argentine governments rapidly reaching the point where armed conflict could not be avoided. As the British carrier task force steamed toward the islands, the squadron received orders to prepare for the deployment of a detachment six aircraft to the islands. The peacetime Gull Gray and White paint scheme, with its colorful rudder and elevator stripes carried by the T-34Cs in their training mission, was quickly overpainted with a more warlike camouflage of Tan and Light Green over Light Gray with an Orange identification band around the rear fuselage. National markings were reduced in size with the Blue and White rudder stripes being replaced by a small fin flash. In preparation for the move to the islands, the six aircraft staged south to the Rio Grande air base in southern Argentina.

On 23 April 1982, four aircraft departed Rio Grande for the long over water flight, some 437 miles, to the islands. The aircraft were escorted by a Beech B.80 for navigational support and each carried two 7.62MM gun pods and two seven shot 2.75 inch rocket pods. The aircraft arrived at Port Stanley later that day and were joined the following day by two additional T-34Cs.

On 29 April the detachment moved to the grass and dirt field on Pebble Island, now known as Calderon Naval Air Station. The Turbo Mentors were joined by Argentine Air Force Pucara light attack aircraft on a routine basis, since the Pucara's base was quite often bogged down by the frequent rain storms.

At 1500 on 1 May, the island commander ordered that the unit launch a search mission for British helicopters which had been reported east of Port Stanley. Three pilots were briefed for the mission and took off at thirty second intervals. The T-34Cs joined up over East Falkland Island, about fifteen miles from Port Stanley. Shortly after the aircraft joined up, one of the pilots reported sighting a Royal Navy Sea King helicopter headed away from them at about 1,000 feet.

The flight leader ordered the formation to attack and, as he switched on his armament panel, he heard the call '*Harrier, Harrier at six o'clock.*' The formation split with the T-34 leader making a hard right turn, narrowly avoiding a burst of cannon fire from the lead Harrier. All Argentine aircraft dumped their ordnance and headed for the safety of the numerous clouds that were in the area. Exiting the cloud layer at low level, each Turbo Mentor made its way back to base by flying at wave top level. All three were able to safely return to Pebble Island, although one had been damaged by a cannon shell that passed through the rear canopy, luckily without exploding.

From 1 May through 14 May the T-34 detachment flew some twenty armed reconnaissance sorties from Pebble Island, mainly over Falkland Sound. On the morning of 15 May, forty-five commandos from D Squadron, 22nd Special Air Service were landed by helicopters of 846 Naval Air Squadron on the island under the cover of poor weather. Supported with naval gunfire by the destroyer HMS GLAMORGAN, the troops attacked the aircraft and installations on the field. As a result of this raid, three of the squad-

ron's T-34Cs (serials 1-A-410, 408, and 412) were destroyed and a fourth (1-A-411) was badly damaged.

Several days after the attack, the two surviving T-34Cs were withdrawn from the island and flown back to mainland Argentina, ending the combat career of the Turbo Mentors.

One of the aircraft abandoned on the islands was T-34C serial 1-A-411. This aircraft was the one seriously damaged by the SAS raid on Pebble Island. The Turbo Mentor was later returned to England and put on display at the Fleet Air Arm Museum in Yeovilton.

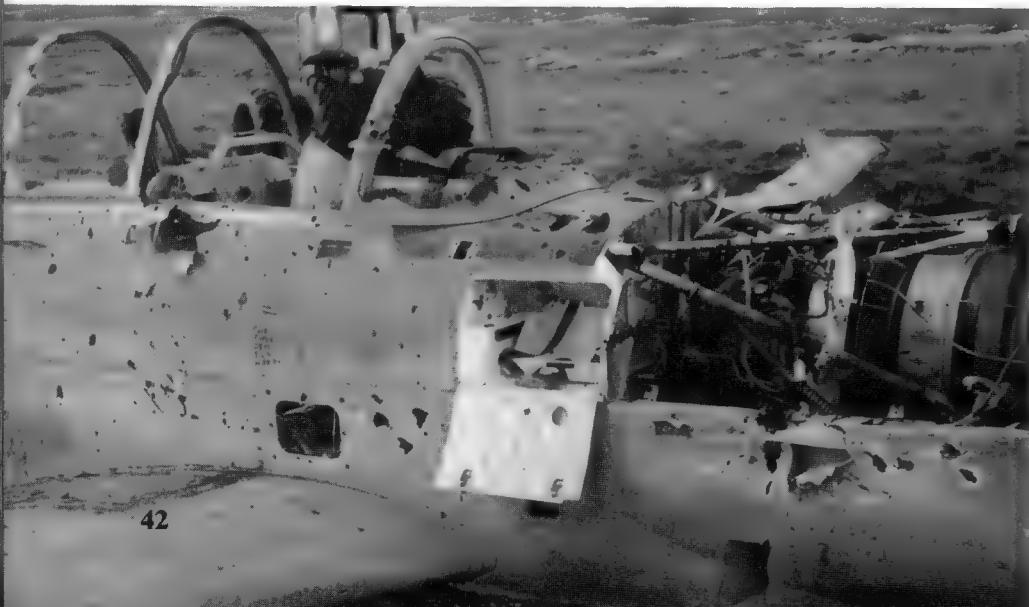
This Argentine Navy T-34C-1 carries pre-war markings consisting of overall Light Gull Gray with Light Blue and White fin and horizontal tail markings. The circle on the White portion of the rudder was a Yellow sun marking. The fuselage stripe was International Orange. (Beechcraft)





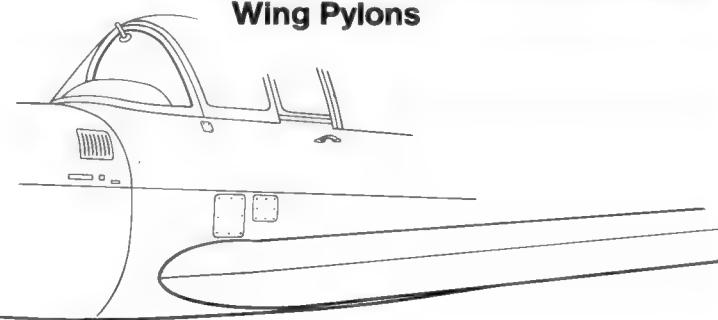
This camouflaged Argentine Navy T-34C-1 carries two twin 7.62mm gun pods on the inboard wing pylons. During the Falklands war the aircraft normally carried 2.75 inch rocket pods on the outer pylons. (via Dan Hagedorn)

During the Falklands War, this Argentine T-34C was captured by the British and was later used for target practice. Charlie Nogle, who will go anywhere in the world in search of T-34 parts, was not permitted to salvage this hulk. (Charlie Nogle)

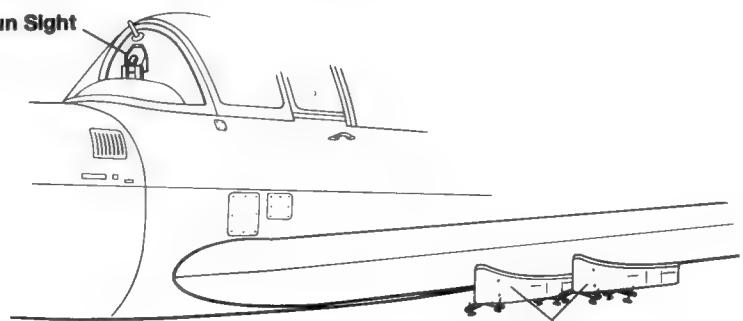


42

T-34C



T-34C-1



Ordnance Pylons

ALLISON AT-34

During 1984, the Allison Gas Turbine Division of General Motors, working with Soloy Conversions of Olympia, Washington, installed an Allison 250 series turbine engine in an A-36 Bonanza airframe. The 250 series engine had been in service for nearly twenty-five years with some 20,000 engines having been manufactured and was used primarily in helicopters, where its light weight and reliability made them very popular.

The Allison engine weighed 195 pounds and produced 420 shaft horsepower (shp). It replaced a Continental piston engine that weighed over 500 pounds and produced only 285 horsepower. With the turbine engine, useful load, rate of climb and cruise speed were all greatly increased. Thanks to this increase in performance, Allison felt that there was a market for the conversion, even with its considerable cost (\$266,000 installed). The general aviation public agreed and Allison received deposits for twenty conversions, which were held pending issuance of a Supplemental Type Certificate by the FAA.

The possibilities for a similar conversion for the T-34 were not lost on Allison. This type of conversion had been done at least once before, when Marsh Aviation of Mesa, Arizona, installed a Garrett AiResearch 400 shp TPE-331-43A engine in a T-34B. Although successfully tested during 1980, the conversion was never marketed.

There were several good reasons for Allison to undertake another turbine conversion of the T-34 airframe. By 1987 there were over 200 T-34s on the civilian register. Many of these had already been converted to the larger 285 hp piston engine and most had undergone some kind of restoration. Allison decided to enter into partnership with Soloy and a new company, headed by Charlie Nogle, was formed under the name Men-

tors Unlimited to do the restoration and conversion. The conversion included installation of the engine, new wing fuel tanks capable of holding eighty gallons (forty per wing) and twenty gallon tip tanks. Nogle's personal T-34 served as the prototype and was converted in time for the aircraft to be flown to the 1987 Paris Air Show.

Mentors Unlimited planned to show the turbo T-34, now known as the AT-34, to the military market at the Paris show. Just about every government in the world that flies military aircraft sends representatives to Paris. It is perhaps the world's premier military aviation showcase and marketing show. At the time, Beechcraft was offering the turbine powered T-34C for just over one million dollars per aircraft, which was the average price of most turbine powered primary trainers. Since both the T-34A and T-34B were still being operated by several foreign governments as primary trainers, Mentors Unlimited felt that there was a good market for their conversion, especially since the cost was about one-third that of a new production T-34C.

The marketing plan stressed that the conversions could be done in-country, that existing inventories of spares could continue to be utilized and the retraining of maintenance personnel would be limited to the engine and its related systems. Thanks to the wide popularity of the Allison engine, access to spares and maintenance support was available virtually everywhere. Performance of the AT-34 was spectacular. It weighed over 1,000 pounds less than a T-34C and had more power. Mentors Unlimited advertised a rate of climb of 2,100 feet per minute and a top speed of over 200 knots.

Despite extensive marketing tours of South America and Europe, there have been no sales of the Allison powered AT-34. At this time, the AT-34 has flown over 600 hours and performed hundreds of test and demonstration flights. It has proven to be as reliable and straight forward a trainer as the earlier piston powered T-34s.

The prototype Allison AT-34 conducts a test flight over the mountains, flown by Bob Farrell, one of the partners in its development. The AT-34 was a conversion of the T-34 airframe to turboprop power and was marketed by Mentors Unlimited.



The AT-34 featured a modified fin with a curved fillet, a longer nose, and wing tip fuel tanks. Although widely demonstrated, there have been no orders or further interest in Allison conversions for the T-34. The author flew the aircraft for the photo hop. (Bob Morse)



Civil Mentors

When the USAF decided to change to an all-jet training program, it declared the T-34A as surplus to requirements. A number of these aircraft were exported under the Military Assistance Program (MAP) to friendly air forces; however, at least seventy were ferried to Davis Monthan AFB, Arizona. Here the aircraft were placed in storage, pending complete overhaul and eventual issue to the USAF Academy in Colorado Springs, Colorado.

In the event, the Academy turned down the T-34As and they were released by the Air Force for use by the Civil Air Patrol. The aircraft were licensed for CAP use by Air Craftsmen in Oklahoma City. A contract price of \$3,000 per aircraft was agreed upon to make any necessary repairs and to install the FAA-mandated certification kit, which was required to gain a civil license. This contract was completed during 1967.

When the prototype Mentor was originally certificated, it was done under Federal Aviation Regulations (FAR) Part 3 (now Part 23). One of the requirements at that time was that the aircraft had to be recovered from a 10 degree bank using rudder or aileron only. The military T-34 could not do this in the landing configuration (gear and flaps deployed). That mandated the installation of a rudder-aileron bungee interconnect, which is one of the primary differences between a stock military T-34 and a civilian Mentor. The military felt that if they couldn't teach a student pilot to coordinate his control inputs, then he would wash out of training. The FAA, on the other hand, is hell-bent on protecting all pilots from themselves. Their requirement for the bungee interconnect says: "If you intend to cross-control this hummer, buddy, you better have strong arms and legs!"

The Civil Air Patrol eventually received an additional 103 T-34s, eighteen of which were T-34Bs. An unspecified number of damaged aircraft were also given to the CAP as a source of spare parts support. In addition, twenty disassembled T-34Bs, already reduced to spares by the Navy, were also given to the CAP. Some of these airplanes were later traded and rebuilt by civilians outside the CAP. A few are still operated by CAP wings; however, the majority of them have been sold at sealed-bid auctions.

For many years, a CAP auction was virtually the only way a civilian could acquire a T-34. Since the CAP had paid for the "civilianization" of their Mentors, they were allowed to dispose of them as they saw fit. This was directly against a long-standing government policy of no direct sales of military aircraft to the public. Over the years there have been unsubstantiated rumors (denied by Beechcraft) that part of the sales agreement between Beech and the government contained a stipulation that the government would not sell surplus T-34s to the public. Given the big problems that surplus C-45s and AT-11s had caused postwar Beech sales of the Model 18, this was not an altogether unbelievable rumor; however, no evidence has ever been uncovered to support this.

While no T-34s have ever been sold directly to civilians, there have been a couple of exceptions. The Forestry Service sold two flyable T-34Bs and DOD does control sales of non-airworthy wrecks through base salvage yards. There have been several instances of surplus T-34s being used as targets and even piled up and burned. T-34C structural salvage is subjected to cutting up and shredding to remove the possibility of civilian rebuilding of a wrecked T-34C model. Whether this is the result of some clandestine agreement, or just governmental inefficiency, has yet to be proven one way or the other.

Although a quasi-governmental agency, the Civil Air Patrol is first and foremost a civil agency, with responsibility for maintenance of its own aircraft. This responsibility trickles down to the local wing level and the decision to keep or sell wing aircraft usually



This Mentor was the first T-34 flown by the author. The ex-Civil Air Patrol aircraft carried Beech serial G-17. Today the aircraft has been completely restored and is registered N34B. (Lou Drendel)

is a result of maintainability and maintenance costs. The complex T-34 is much more maintenance-intensive than a general aviation type aircraft and once spare parts became harder to find (and therefore expensive), most CAP units made the decision to sell off their T-34s. Normally when that happened, a notice would appear in the trade papers announcing a sealed-bid auction of the unit's T-34. As an indication of the rapid escalation of T-34 prices, during 1974 prices ranged around \$12,500, while during 1986 the price was \$56,500. The same aircraft during 1990 would probably bring up to \$100,000.

There are currently over 200 T-34s on the civil register and, for the most part, they are in better condition than when they came out of the factory. The T-34 has inspired some amazingly diligent parts scavenging by several civilians over the last twenty years. Foremost among these is Charlie Nogle, operator of Nogle and Black Aviation in Tuscola, Illinois. Charlie is also President of the T-34 Association (which he founded). Currently the association has a membership of over 500 T-34 devotees. And "devotees" may not be a strong enough word to describe the way T-34 owners lavish attention on their aircraft. The T-34 Association has provided a vehicle for the exchange of maintenance information, parts tracking, flying stories, and for the formation of a very thorough and active formation flying qualification program.

Charlie Nogle was the second civilian to rebuild and license a T-34 (Roy Goode was the first during 1961, but he promptly sold his Mentor). The first T-34s rebuilt from salvage were purchased by aircraft brokers, who then exported them to foreign air forces. There were several brokers in the business of buying parts at government sales and buying wrecks from the Air Force for their parts or for actual rebuilding. Fortunately for T-34 owners, many of these parts are still in privately-held stocks and are available to those in need of parts support to keep their T-34s flying.

Beechcraft does not, and has not, supported the T-34, but it has been a tremendous help (in an indirect way) to the T-34's civil survival. It has done so by keeping the Bonanza in production. Design improvements that went into the T-34 were usually incorporated into later Bonanza models. Model 45 part numbers have been in continuous production since the 1950s, even though the T-34 has not.

There are at least three major aircraft rebuilders in the United States that specialize in the T-34. They are probably guaranteed of raw materials by the repatriation of T-34s from various foreign customers. To date Mentors have come back into this country from Chile, Spain, Indonesia, Japan and the Philippines. With values escalating at rapid rate, it is a safe bet that importers will be after other foreign Mentors in the future.



Kris and Ramona Cox announced their impending nuptials with this unique invitation, complete with their message taped on the nose of their T-34A.



The four types of aircraft in the EAA Warbirds of America formation flight training program. In this formation over Indiana during 1988 were Gene Martin (T-34), Dick Dieter (T-28), Jeff Ethell (P-51) and Marion Gregory (T-6). (Rick Grettz)





Graves Sanford and his family in their Oshkosh Reserve Grand Champion award-winning T-34A. The only concession to authenticity was the installation of a 285 hp engine and the use of modern avionics. The aircraft in the background was flown by the late Forrest Molberg. (Lou Drendel)



The T-34 Association put up the largest civilian T-34 formation ever seen during the EAA fly-in at Oshkosh during 1987. A total of thirty-four T-34s roared over the 300,000 spectators at the largest annual aviation event held in the United States. The top cover aircraft (not visible) was the thirty-fourth T-34. (Brad Drendel)



Four members of the eight-aircraft Lima Lima Squadron formate over Lake Michigan on a practice flight. (Front to rear) Drendel, Gretz, Martin, and Morse. The Lima Lima group are regular performers on the air show circuit. (Rich Benck)





Mike Dillon's T-34A model was brought back from Latin America. The aircraft was armed with .30 caliber machine guns in the wings and a gun camera fairing mounted on the nose, just below the air intake. (Lou Drendel)



Other aircraft may have pin-ups painted on them, but T-34s inspired something far more! *MISS Pooh*, a T-34A owned by Jud Deakins, has attracted the attention of a living, breathing pin-up. (via Jud Deakins)

The late LT Jim Dobson of Training Wing Five, leads Dan Blackwell, Charlie Nogle, and Dennis Dodd in a formation flight of T-34s. Charlie Nogle's Invasion striped T-34A later became the prototype for the Allison AT-34. (Charlie Nogle)





Julie Clark has flown her immaculately restored T-34A in airshows from coast-to-coast. When she is not flying aerobatics, she is a Captain for Northwest Airlines. Julie has over 14,000 hours of flying time and has checked out in more than sixty aircraft types. (Lou Drendel)



Dick Tews files *Miss Budweiser* through a cloudy sky. Civil T-34s carry a variety of colorful paint schemes. This Mentor is overall Gloss White with Red trim and the Budweiser logo on the fuselage. (Lou Drendel)



Charlie Nogle owns this T-34 painted in Navy trainer colors. The Mentor has been modified with a 300 hp engine and additional fuel cells in the wings giving the aircraft an additional thirty gallons of fuel. (Lou Drendel)





Gene Grengs repainted his T-34 with a scheme similar to that carried by T-34Bs of the Navy recruiting command. The aircraft is Blue and White with Red trim and FLY NAVY in Red on the tail. (Lou Drendel)

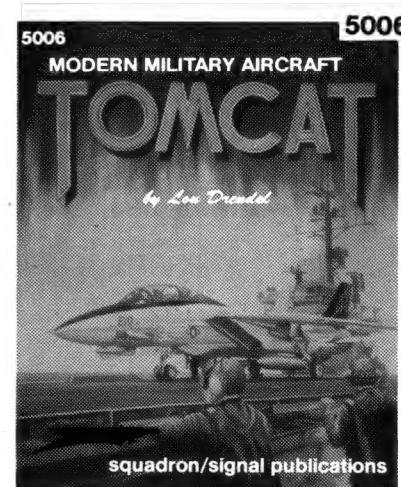
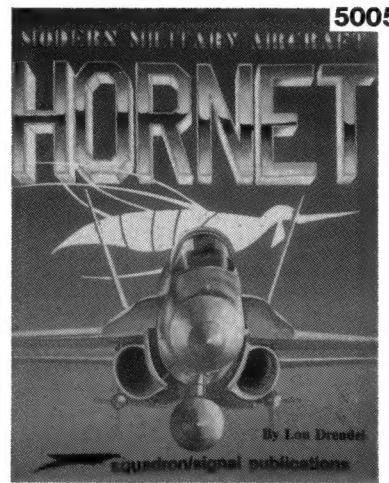
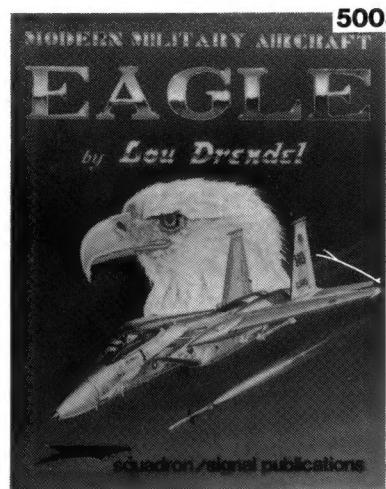
As far as can be determined, no military T-34 ever carried the Navy Gloss Dark Sea Blue color scheme or had Marine Corps markings. When you own the aircraft, however, you can paint it any way you want. The aircraft is now painted in Yellow Lima Lima colors. (Lou Drendel).



Although at first glance this T-34 might appear to be painted in a Navy trainer scheme, it carries USAF markings. The aircraft is a Fuji-built T-34 with a 260 hp engine and is licensed in the Experimental category. (Lou Drendel)



MODERN MILITARY AIRCRAFT SERIES



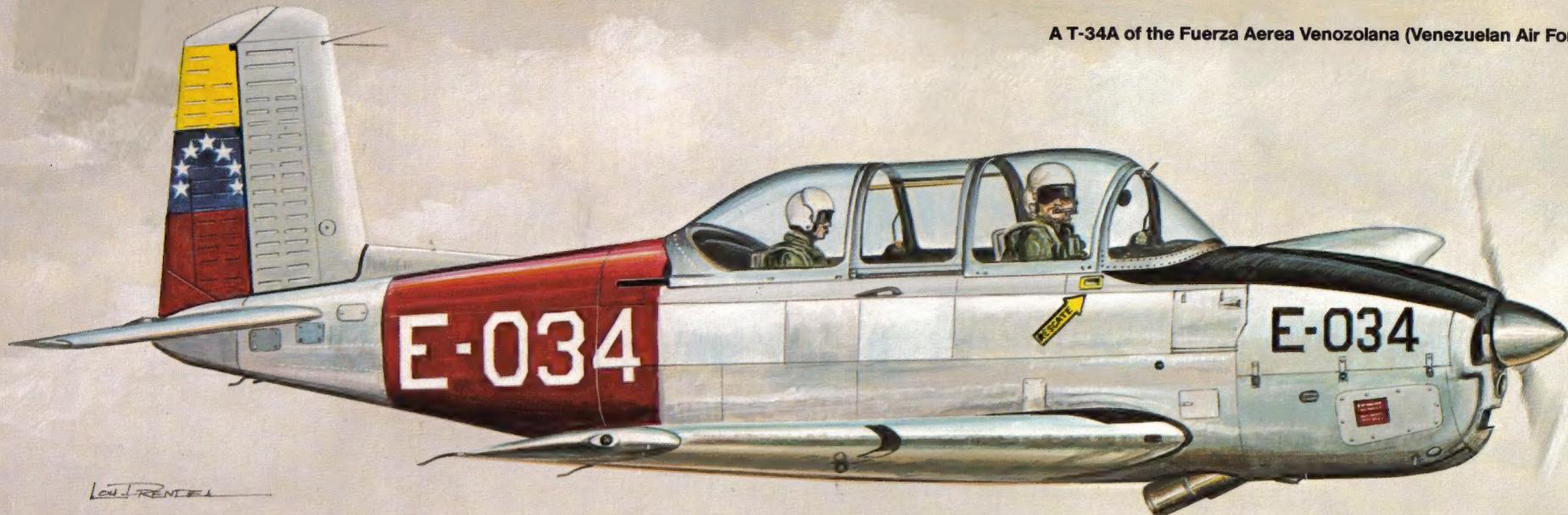
**by
Lou Drendel**



**squadron/signal
publications**

Written and illustrated by noted author and artist Lou Drendel, the Modern Military Aircraft series details aircraft used by each of the U.S. services. From the Huey helicopter, through the F/A-18 Hornet, these books feature 8 pages of color, showing markings and insignias in paintings and photographs. The covers have also been beautifully illustrated in color by Drendel. Of particular interest to the modeler will be the 1/72 scale drawings found in each book. 64 pages. (SC)

A T-34A of the Fuerza Aerea Venezolana (Venezuelan Air Force).



Lou PENDLE

Light Attack Wing One used this specially marked T-34C Turbo-Mentor for range clearing duties.



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